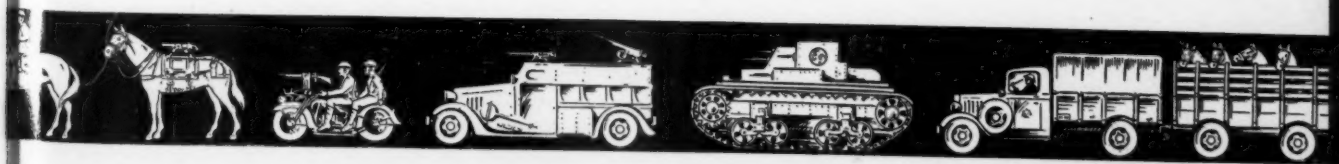
THE CAVALRY JOURNAL

JANUARY-FEBRUARY, 1941



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1624 H St., N.W. *The Cavalry Journal* Washington, D. C.

The Cavalry Journal

PUBLISHED BI-MONTHLY BY
THE UNITED STATES CAVALRY ASSOCIATION
LT. COLONEL FENTON S. JACOBS, CAVALRY, EDITOR

VOLUME L NUMBER 1

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PUBLICATION DATE: FEBRUARY 1, 1941
Deadline date, next issue: March 10, 1941.

United States Cavalry Association

Organized November 9, 1885

The aim and purpose of the Association shall be to disseminate knowledge of the military art and science, to promote the professional improvement of its members, and to preserve and foster the spirit, the traditions, and the solidarity of the Cavalry of the Army of the United States.—Article III of the Constitution.

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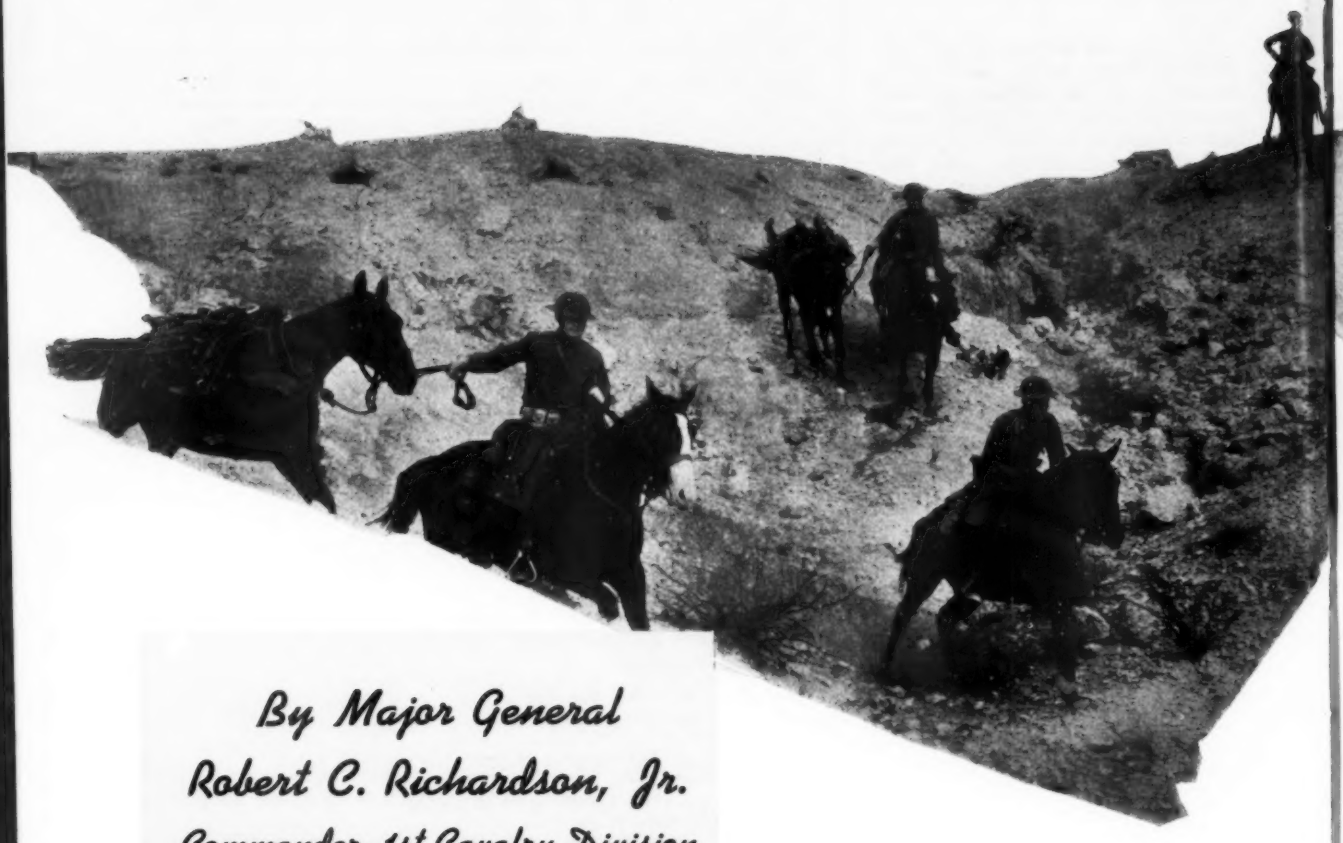
Editorial offices: 1624 H Street, North West, Washington, D. C. Copyright, 1941, by the U. S. Cavalry Association. Publication offices: 1406 East Franklin Street, Richmond, Virginia. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage provided in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization, $3.00 per year. Foreign, $3.50 per year. Canada: including War Exchange Tax, $4.00. All subscriptions payable in advance. Single copies, 75c. Extra copies to subscribers, 50c. THE CAVALRY JOURNAL *does not* carry paid advertisements.

THE WIDER RÔL



By Major General
Robert C. Richardson, Jr.
Commander, 1st Cavalry Division

SOME years ago there appeared in the Paris newspapers an account of a famous divorce trial in England. The London papers reported the most intimate details of the affair with the utmost candor and wholly without restraint. The French papers limited their notices to brief summaries of the trial—but commented on the great difference in English and French mentality in matters of this kind. The French editors stated that it would be impossible to publish such reading matter in a French newspaper for fear of the resentment and moral indignation of the public—and yet despite this commendable moral attitude the French remained the victims of a fixed world judgment. There was an ironical lament that no matter what the English did, they would always be judged by the world as "righteous," whereas no matter what the French did they would always be regarded as frivolous.

Layman's Viewpoint

A similar kind of fixed idea has until very recently dominated the layman's point of view in his evaluation of the Cavalry as a useful arm in modern warfare. The possibilities of mechanization as visualized prior to the War and its subsequent and successful achievements in Spain, Poland, the Low Countries and France all seemed to support a belief that Cavalry was outmoded. Very properly this issue has been widely debated and discussed both in the papers and magazines as well as in Congress. Our people and our legislators have a right to enquire into the value of any part of the armed forces, and there cannot be too much light thrown on the subject. Most of the discussion however seems to have been led by the enthusiasts of mechanization who not content with the successes of their units in battle were bent on depreciating the value of horse cavalry as if the success and admittedly enormous value of mechanization automatically relegated horse cavalry to the discard. This point of view probably was influenced by the fact that in past wars Cavalry has always been out in front and therefore since the mechanized forces of the Germans led the way so brilliantly in this new World War they had naturally supplanted horse cavalry.

LE OF CAVALRY

Professional Viewpoint

In this article an attempt will be made to present the point of view of those who have been associated with the horse cavalry and know its powers as well as its limitations. It is in no sense an attempt to extol horse cavalry above other arms or to challenge mechanization which has just proven itself so magnificently in battle. It is rather a discussion of horse cavalry in which close aviation support will be the refrain and in which the relative rôles of cavalry and mechanization will be examined. In this evaluation it is important to keep clearly in mind that the discussion is gaged entirely on the use of Cavalry in our own country with its vast spaces and highly diversified terrain. Since our Army never knows where it is going to fight we must consider all sorts of conditions of terrain and climate. Hence the organization and training, armament and equipment of the Cavalry have been developed so that it will not be at a disadvantage under any circumstances. It is devised to make each unit as flexible, maneuverable and capable of independent action as possible. Our Cavalry service is thoroughly imbued with the spirit of independent action, and the mentality of both officers and men has been formed to be self-reliant, resourceful, and aggressive. It has been necessary to build this type of combat unit to be able to cope successfully with conditions in rather undeveloped countries whereas European cavalry operates in highly organized countries. Our problem differs from that of a European Army. The Germans for example knew every inch of terrain over which they were to operate, the rivers and streams to be bridged, and the character and quality of the roads, the climate, character and temperament of their adversaries. Every factor of War was in their favor. They were also operating over a relatively small area in their invasion of France.

Cavalry and Aviation

The value of any arm of the service however, cannot be discussed except against the background of aviation. Once upon a time it will be recalled, aviation challenged the value of cavalry. When the aeroplane was in its early stages of development, its military value was judged to be solely a new means of observation. The natural enthusiasm aroused by this new weapon of war ascribed to the aeroplane powers which it did not possess. Immediately it was claimed that the aeroplane had rendered the cavalry obsolete because it could go farther, and faster into enemy terrain, it could see more, its vantage point was unexcelled, it could accomplish in an hour what cavalry could not do in a day, it could encompass in a single photograph more enemy terrain than cavalry could cover in several days and hence aviation alone was the new means of reconnaissance that made cavalry useless.

Many of the above missions were actually well done by the planes but it was soon found that observation aviation could only see in a wholesale manner and not in detail, that its observation was intermittent, sporadic, and not continuous, that its reconnaissance reports were of a more negative character than positive since it was obviously impossible to see what was concealed in close terrain, and lastly its usefulness was strictly limited to favorable weather conditions. During the World War when serving with the 10th French Corps in the Valley of the Meuse, I observed that there were literally weeks at a time when the fog and mist kept the observation aviation grounded, and even today observation aviation must still bow to the tyranny of weather conditions whereas horse cavalry is totally independent of them.

Aviators were among the first to recognize that far from supplanting cavalry as a reconnaissance agency the two arms were complementary, that each has its own

sphere of action, and that aviation had given the Army Commander an additional useful means of reconnaissance which enlarged the picture furnished by the Cavalry. Certainly if any further proof were needed, the reconnaissance performed by the 6th Cavalry in the Louisiana Maneuvers in May is sufficient. Weak in observation aviation the IV Army Corps depended almost solely for its information on the 6th Cavalry which secured it for the commander.

In all of this early discussion there was almost a complete forgetfulness that cavalry and aviation both have other missions than reconnaissance and that the Cavalry is organized to fight and to hold ground and the Air Corps to fight in the air and to supplant artillery as a means of long range bombardment. But gradually that phase of discussion of the relative values of the respective arms passed. Today aviation and cavalry are fully conscious of each other's rôle, and no branch realizes more keenly than the horse cavalry that in modern warfare its success will depend to a large degree not only on friendly mastery of the air but in addition on the close support of its own aviation, a theme to which I shall return later in this article.

Mechanization

Turning now to the mechanized forces, their development has been slower and much more painful than that of aviation. Their usefulness as a battle force was viewed with greater skepticism, chiefly because there was a lack of vision as to their employment in combat. None of the armies of the world except the Germans appeared to be able to clarify their ideas on the potential value of the armored vehicles and this blurred vision hampered their development.

After the World War the English led the movement going so far as to mechanize the larger part of their cavalry. The efforts of the English were very closely studied and analyzed by the French and by ourselves. The critical analysis of mechanization however, was confined chiefly to its mechanical efficiency and to the development of tactics and methods of combat as an isolated arm. The analysis was rather limited as it apparently visualized only its employment as a part of the ground forces operating independently of the air forces, each arm carrying out its respective mission, without the coördination of efforts of both that the Germans so skillfully devised.

The French lagged far behind the British in the development of their mechanization because they were not convinced at first of its efficiency and were unwilling to invest the large sums which its development entailed. Our Army lagged even more than the French in developing mechanization, because of inability to visualize what it could be and because of a very understandable unwillingness to be forced to develop it by sacrificing horse cavalry regiments whose value was known. Had we had a bold conception of its value and use, and been united in our convictions, it is almost certain that mechanization could have been developed in our army long before it was. But under our system in times of peace when the country is not threatened, bold conceptions are viewed with a jaundiced eye. But that is all water under the bridge and under the leadership of our Chief of Staff, General Marshall, we are now on the way toward creating an armored force of the greatest power.

Cavalry Role Extended

The Germans unhampered by political or economic conditions gave free rein to their military conceptions and let themselves go. They not only developed splendid mechanical vehicles but what is more important they put their best brains to work in order to find a method of exploiting mechanization to its fullest. In all armies, it was conceded that the missions of the mechanized forces were those of the Cavalry, and that is the reason that Cavalry was chosen as the sponsor of the mechanization. Its development has therefore been an enlargement of cavalry's rôle, and opened up a wider field for the employment of Cavalry in its broadest senses. The motor however, has given to mechanization a great advantage under certain conditions in accomplishing their missions. Their speed provides a radius of action in equal time limits denied to horse cavalry, and they are admirably suited therefore for long distance reconnaissance, for wide encircling movements to surprise the enemy whether on his flanks or rear, for surprise raids on his communications, his convoys and his reserves. They form the spear head of a rapid advance. On terrain which is favorable to their employment and when time, speed and surprise are the essential factors it is mechanization that should be employed. Mechanization affords the Commander an extraordinary means of surprise warfare to accomplish his mission. Under air protection he launches his mechanized forces against an alert enemy. Their speed soon removes them from immediate proximity of the Army and at once the front loses that close protection without which an army is in constant danger. While the mechanized forces are pushing forward on reconnaissance far in front and perhaps simultaneously making a wide encircling thrust against the enemy lines of communications, there is a large zone between the mechanized road columns that must be thoroughly covered if the motorized infantry and artillery, both highly vulnerable, are to advance with surety and confidence. There is only one arm of the service that has the speed to keep ahead of the army, that has the maneuverability, that can negotiate any sort of terrain, open, close, wooded—and that without fail can send back to the Army Commander reassuring reports of both positive and negative character, and that is the *horse cavalry*. Under very favorable terrain conditions the mechanized forces can accomplish this same mission but there is the gamble of terrain and in war the stake is too high to gamble especially when the security of the Army is

involved. It is patent therefore that far from supplanting horse cavalry mechanization has only broadened the field and uses of Cavalry. For example by employing both types of Cavalry the zone of reconnaissance has been greatly deepened and widened while the security of the Army has been strengthened as the Commander can divert to this mission the additional strength of horse cavalry now released from its long distance reconnaissance missions by mechanization.

Cavalry-Mechanized Training

Horse and mechanized forces complement each other perfectly and form a combination of fire power and of degrees of speed and mobility that constitute one of the most formidable means of war that yet has been devised. The potentialities of this combination especially in attack have not yet been exploited. These two parts of the Cavalry should be stationed near each other and trained together. Imagine the power of a Corps composed of an armored division and the 1st Cavalry Division. Such a team with aviation as their partner and thoroughly integrated in their training will be powerful enough to give knock-out blows to any resistance. Warfare in this country will never be of a stabilized character but will be a series of powerful blows delivered by just such combination of agencies at critical points. We should therefore assume the leadership in this type of team training of aviation, mechanization and cavalry. No other army in the world has done so yet. Here we have a virgin field in which to work with limitless possibilities of achievement, and perhaps the opportunity of making a definite and new contribution to methods of warfare. For the first time in our history the American Army has both mechanized and horse cavalry divisions actually at war strength. The methods of skillfully combining these forces, and of extracting the greatest benefit from their fire power and mobility will soon develop if the two forces could only train together. Each of these elements of the Cavalry have their strength and weaknesses which should be studied. For example mechanization is to a large extent road bound and if they do not operate under friendly air protection they are extremely vulnerable targets of enemy aviation to say nothing of enemy antimechanized weapons. Their successful employment seems to me to presuppose constant movement and the most thorough coördination of all elements. The moment they stop they become very vulnerable targets, and hence when denied movement and air support as will inevitably happen in a battle in which the enemy has anything like equal strength and offers any kind of real resistance their fragility will, it is feared, be quickly revealed. On the contrary the horse cavalry is much less vulnerable due to its extraordinary ability to disperse with greater speed than either mechanization, infantry, motor columns, or motors. The two acting together on the ground with constant aviation support and protection form a combination that is hard to beat. Again there is no very definite guide for their correct battle employment of mechanized forces other than horse cavalry tactics. They are too new, and the tactics which have been developed in our services are purely theoretical. We have seen how the Germans employed their mechanized forces in an advance on a broad front against a weak and demoralized opponent. From that incident many conclusions have been drawn. We have not yet seen how their mechanized forces will be employed in a battle against a strong, equally well armed and determined enemy. We can only surmise. In our own service we are groping for the light, and it will probably be found more quickly if mechanization works with horse cavalry whose tactics have been fairly well developed, and whose organization has been completely changed. There will certainly occur modifications in the conception of both horse and mechanized tactics. In the combined training of these elements, the fullest benefit will not accrue without integrating in this training Bombardment Aviation. The three arms must be trained as a perfect team. But before discussing the air support so essential in modern warfare let's dwell for a moment on the horse cavalry, its organization, fire power, and employment, and show what great strength it has as an axis partner of mechanization.

Our Horse Cavalry

Parallelling the development of our mechanized forces, has been the modernization of our horse cavalry. All cavalrymen no doubt are familiar with the new organization of the nine troop regiment with its great fire power and with the division organization of the two brigades with their new weapons troop, four regiments, Division artillery of headquarters and three battalions, an antitank troop, a reconnaissance squadron of four troops replacing the old armored car troop and of course the service units. At war strength the Division will have 618 officers and 9,500 men. In itself the division is a formidable fighting force, as may be visualized from its 942 machine guns, 67 antitank guns, 14 (81-mm.) mortars, 9,764 pistols, 4,863 M-1 rifles, 24 (75-mm.) field howitzers and 12 (105-mm.) howitzers. This fire power is placed in the Division with a view to flexibility and it is capable of all sorts of groupings so as to bring all types to bear on a desired target. It is mainly carried on horses which are the most mobile transport yet devised for limited distances over any terrain. Therefore this fire power can be shifted from one point to another on the battlefield as quickly as any other means with fewer losses and greater dependability under all conditions of weather and terrain. Given sufficient trailers to transport the animals, it can be shifted anywhere rapidly in the theater of operations. Experiments on terrain near Fort Bliss have actually been made to see whether this statement could be supported and found to be true within battlefield limits of 10 and 12 miles. The Division is now so richly endowed with fire power that it not only is able to take care of itself

offensively but its machine guns, mortars and artillery give it great defensive strength and staying powers. The value of this great strength depends of course on how well it is used not only by the Division Commander—but by higher commanders who assign missions to the Division. Missions must be suitable to the purposes of Cavalry. It is a highly specialized body that has very peculiar powers that can be capitalized but which can be quickly dissipated if assigned improper missions. It is fatal to use it like infantry giving it a zone of action with academic artillery support and fighting it side by side with infantry since its organization was never designed for such use. In past years the Cavalry made a fetish of the mounted charge and were tenacious of its value long after the appearance of the machine gun on the field of battle. In maneuvers waves of horsemen would deploy with admirable precision and charge an enemy in position who was well entrenched with heavy and light machine gun protection. Such tactics were not approved by many cavalry officers as they were regarded as unsound.

Doctrine

The doctrine of the supremacy of the charge no longer prevails and is not taught either at the Cavalry School nor in the Cavalry service. Instead there is insistence on the doctrine of maneuvering mounted so as to get into position and fighting dismounted, relying on fire power and maneuver to defeat the adversary and not on shock action of horse and rider. The mounted charge is regarded as highly exceptional and then only by small bodies of Cavalry. It has been shown in the discussion of mechanization that horse cavalry is especially adapted for missions of reconnaissance and counter-reconnaissance in that zone in front of an army which cannot be efficiently or thoroughly covered by either aviation or mechanization. In this field Cavalry is supreme. It is not confined to roads nor is it impeded by woods, by rough ground, nor by water, nor by lack of supplies. It can operate at all hours of day and night, in rain or in fair weather. There is no other arm that can perform this highly essential service with equal efficiency. Remember that Herodotus wrote of the Persian messenger who "travelled with a velocity which nothing human can equal"—"Neither snow, nor rain, nor heat, nor darkness are permitted to obstruct their advance." That might have well been written of the horse cavalry today only we might add "nor mud." In its employment on other missions, as a division it has a real rôle on the flanks, both offensively against the highly vulnerable infantry motorized column, and against the opponent's Cavalry. It is adapted for the close flank protection of the Army as it is so constituted that it can operate independently and afford maximum protection except from attack by large mechanized attacks. We must depend on our armored forces to come to grips with enemy armored forces because neither horse cavalry nor infantry is equipped with sufficient antimechanization to defeat a large determined mechanized force. Among other uses, horse cavalry is especially adapted to raid all forward installations of the enemy, his forward depots, communications and resources especially under cover of night as the advance of Cavalry is largely noiseless. But one of the most important uses of large bodies of horse cavalry is to form a reserve for a commander, a reservoir of power upon which he can draw at the psychological moment and be able to apply a great volume of fire quickly where he wants it. In every battle there comes a time when the action and pressure of a cohesive unit with great fire power, is needed at a particular point. This is the moment to use the Cavalry as it has an effect *sui generis*. But too often it is not available as it is scattered on inconsequential missions. It takes great character to hold large bodies of Cavalry in reserve and to refrain from dissipating its power, but he who can withhold it until the proper moment arrives for its use, has a great chance of winning the battle.

Comparison

It may well be asked why cannot the mechanized forces be just as effective for reconnaissance, flank protection, raids, and as a mobile reserve. As for reconnaissance it has been shown that terrain features are

an unsurmountable obstacle to complete reconnaissance by mechanization. As for the other missions, under favorable conditions mechanized forces can perform them equally effectively—but who is going to guarantee good weather, no rain, fair and negotiable terrain, unfailing air support, air superiority, gasoline supply, all of which factors are essential to mechanization and totally unessential for the successful operation of horse cavalry. If the Cavalry is to be employed in our country, or in any country of similar physical development I visualize it given frequent independent missions by the Army. It has inherent strength to perform such missions and its organization is admirably adapted for such use, especially if given proper air support and some chemical troops. Smoke and lots of it is essential to successful Cavalry operations with the help of aviation. It can be used boldly, and even without its help it can be so used, if our Army has mastery of the air, although close support of aviation will go far toward a successful issue. It should not in my judgment, be used in the classical, academic zones of action. Its greatest use will be to combine its action with the mechanized forces and as each has the power to support and protect the other, bringing their enormous fire power to bear on the objective. It goes without saying that in any war that we shall have, our Air Corps will strive for mastery of the air. If that is lacking every mechanized force on the road, all motorized columns, camps, concentrations, are subject to devastating enemy air attack.

German Success

The successes of the German mechanized force were not achieved unaided, but were possible only because their routes of advance were cleared by the thorough and brilliant work of the German aviation. In a football game the player who runs with the ball and makes the gains, captures the attention and applause of the spectators who are only dimly conscious of the interference which made possible his performance. And so it is in modern warfare. Aviation runs the interference for the fire power of the ground forces. The Germans had the imagination to coördinate the use of

their aviation and mechanized force. Taking a hint from General Douhet's book on total war, they used Spain as their laboratory in the use of mechanization and later had their dress rehearsal in Poland. The whole conception was predicated on the closest cooperation between aviation and mechanization in which heavy bombers demoralized mobilization of the adversary by destroying his railroads, his air fields, his concentrations and his morale, while light bombers worked with the mechanization clearing its advance methodically. The thoroughness with which the German Air force did their work is wholly responsible for the success of the lightning war, and it was aviation which permitted the mechanized forces to advance with such rapidity, occupying demoralized villages and key strategic points and which gave to their forces the prestige that they now enjoy in the public mind. Does any one suppose however that German mechanized forces could possibly have advanced without that intimate air support? But the ability of a Cavalry Division to perform its missions will be greatly strengthened if assured of the support of light bombers capable of giving that close aviation support which it sorely needs and which it will add to the accomplishment of its missions, and to the saving of life. With such air support cavalry can go anywhere fully protected and meet the enemy on equal terms. Light bombers will give it such freedom of action, that it can choose its terrain for attack and force its will upon its opponent.

Cavalry-Air Training

It will afford the Cavalry a chance to train with the Air Corps daily. The two arms will be integrated in carrying out the army commander's mission. As it is, the Cavalry has practically no training today with aviation of this type, a kind of training that the War in Europe has proven so successful. In our Army we have not yet practiced in any maneuvers that type of aviation support for ground troops which from all accounts won the war in France for Germany. Coöperation with aviation has been largely limited to a few observation missions, a few attack missions, but on such a limited scale that officers are not familiar with the technique of working with the Air Corps and, vice versa, Air officers are not familiar with Cavalry technique. Light bombers are not available as yet to work with ground forces which presents a serious deficiency in our means of training.

Combat Teams

Warfare in our country can never be conducted as abroad and we should train combat teams of great strength which can strike with speed and ferocity. There is no more powerful a team than the Trinity of Aviation, Mechanization and Cavalry, which we have the opportunity of creating.

The war abroad has been one of movement, the type of warfare and the doctrine that has been traditional in our army and which has brought success in every war that we have fought. Especially is this true of the Cavalry, a fast moving concentrated means of fire which can be placed in the shortest possible time on any objective. Despite all the descriptions of new ways of making war, that side which can put down the greatest amount of fire on the objective, has the best chance of victory. Horse cavalry must be judged today by its perfected organization, by the power of its arms and by its battlefield mobility. If there is one lesson that the actual battle experiences of the present war has clearly shown, it is *the rebirth of Cavalry as a powerful combat force.*

Artillery, Cavalry Division

By Lieutenant Colonel E. A. Hyde, Field Artillery

THIS brief discussion of the Field Artillery with the Cavalry Division is based partly on practical experience and, due to current reorganization, partly on theory. It will be noted that the article covers only the elementary details pertaining to the Division Artillery and to its use. It must be remembered that the Field Artillery is a supporting arm, not suitable for independent action. Its mission in this case, is to support the Cavalry Division.

Organization

The Division Artillery is organized into a motorized Division Artillery Headquarters and Headquarters Battery, two battalions of horse artillery, which are equipped with the 75-mm. howitzer, and one battalion of truck-drawn 105-mm. howitzers. From this it can be seen that the general organization parallels, on a smaller scale, that of the Artillery in the square infantry division. The headquarters battery furnishes the necessary personnel, equipment, transportation and supplies for the operation of the Headquarters. The headquarters functions primarily in connection with training, and in a tactical capacity, having very limited administrative scope otherwise. The headquarters battery is responsible for the training of the personnel, for installation, operation and maintenance of artillery headquarters, controls communications, operates the division artillery command post and all included installations. In general, the term "command post" includes the installation for the commanding officer, S-2 and S-3, the message center, the radio group, the switchboard and local wire installations. The types of communications that are available are wire, radio, motor, mounted and dismounted messengers and visual (rarely used).

Each horse battalion is organized into a battalion headquarters and headquarters battery, 3 howitzer batteries and a service and ammunition battery. The headquarters battery is primarily horsed but includes motorized reconnaissance and liaison elements. The service and ammunition battery is entirely motorized. The kitchen and maintenance elements are motorized in all organizations. The principal weapon is the 75-mm. howitzer.

The motorized battalion is similarly organized, except that all elements are motorized and that the principal weapon is the 105-mm. howitzer. Each battalion is capable of independent action and is complete within itself, administratively and tactically.

The fire unit in each battalion is the battery. The battery is made up of a headquarters, a battery detail, a firing battery, and a maintenance platoon. The battery detail handles all instruments, survey, fire computation and communications work within the battery.

The firing battery, consisting of four howitzers (sections) and an ammunition section, is the real unit of fire. The maintenance platoon (motorized in all organizations) is responsible for battery mess and supply. The 105-mm. battery has no ammunition section.

Equipment

A brief summary of figures gives the quickest index to the basic equipment, fire power and strength of the regiment:

	Hqrs.	*2 Horse Bns.*	*1 Motor Bn.*	*Total*
Officers	10	52	26	88
NCO's	20	236	126	382
Pvts. 1cl and Pvts.	71	986	432	1,509
Horses	14	1,142	...	1,156
105-mm. Howitzers	..	...	12	12
75-mm. Howitzers	..	24	...	24
37-mm. AT	..	12	6	18
.50 Cal. MG's	2	22	23	47
.45 Cal. Pistols	101	1,274	584	1,959
Light vehicles	8	34	28	70
2½-ton vehicles	7	38	67	112
1-ton trailers	2	32	29	63
Motorcycles with side cars	..	12	9	21

This table is exclusive of the band, which is at present non-existent. In addition there are eight officers and seventy-five men attached from the Medical and Veterinary Corps, and an attached Chaplain.

Tactical Employment

No set rule can be laid down to cover all cases for the tactical employment of the Cavalry Division Artillery. Certain general procedures can be followed in preparation for and initial entry into action. However, the Cavalry Commander and the Artilleryman must always retain an open mind regarding its use as it represents a powerful weapon which may be employed in a variety of ways against a variety of targets.

Ordinarily each of the two horse battalions is attached to, or placed in support of, a cavalry brigade, forming a combat team. This is the rule during the advance to combat and at least during the initial stages of combat. Within the combat team in march column, the artillery battalion is placed far enough forward to allow early entry into action, usually between the two regiments of the brigade. The motorized battalion is habitually retained under division control.

The Division Artillery Headquarters and the motorized battalion move in the motor column or with the motor elements of the Division. When combat is imminent the artillery headquarters, less train elements, habitually move with the Division Headquarters. The motorized artillery battalion is placed well forward among the motor elements of the Division to facilitate entry into action.

The ammunition and service batteries ordinarily march at the tail of the combat elements of their respective combat teams or columns, or march with the trains of the column. The ammunition sections of these batteries must be readily accessible to their respective battalions.

Upon entry into combat, a 75-mm. howitzer battalion is ordinarily in direct support of each cavalry brigade while the 105-mm. battalion is used as a general support weapon. However, the Division Commander may at any time centralize the control of all Division Artillery under the Artillery Commander and may then employ all of his artillery as the varying situation indicates. In general, control of light battalions will be decentralized to brigades when the Division operates over an extended front. When the zone of action is restricted or when the brigades are operating in immediately adjoining areas, the control of these battalions will be centralized or decentralized at the will of the Division Commander. The motorized battalion is retained under all except most unusual circumstances as a division support weapon. As such, it is a powerful weapon by which the division commander can influence the action, possessing speed of transportation, the highest division fire power, maneuverability of fire in range and direction. An exceptional case where control of all or part of this battalion might be decentralized is during pursuit. When decentralization is desirable, it is possible to attach batteries from this battalion to the 75-mm. howitzer battalions. Protracted attachments of this type are undesirable.

Essentials to Tactical Employment

Under this heading the most important considerations are Reconnaissance, Mobility, Liaison, Communications, Fire Control and Ammunition. Failure of any one of these elements might cause the artillery to fail in its primary mission.

Reconnaissance: This is carried on constantly by all advanced artillery elements, usually artillery liaison sections and reconnaissance detachments which are placed well forward in column. It seeks alternate routes, positions, observation posts enemy information during the march and is conducted continuously with the same objectives during periods in bivouac and position. Proper reconnaissance must foresee and precede all artillery action.

Mobility: This represents the ability of the artillery to give fire support to the cavalry upon entry into action and to furnish continuous supporting fire during action. The horse battalions can keep up with the horse cavalry at 5 to 6 miles per hour gaits indefinitely. They can maintain faster gaits over reasonable terrain for periods of two or three hours. They can ordinarily keep up with horse cavalry under normal conditions of gait and terrain. After entry into action, continuous support is maintained, in advance or withdrawal, by displacement by echelon. This can be done by staggering

the movement of batteries within each battalion so that at least one battery is always in position and range. A second method is to move one horse battalion while the second horse battalion and the 105-mm. battalion take over the missions of the battalion which is moving. Another possibility is for both horse battalions to move while the 105-mm. battalion takes over all missions. To get the benefits of the potential mobility of this unit, a careful road reconnaissance and a road priority based thereon is essential. The enemies to its mobility are not only adverse terrain, light sand and deep mud, but also obstacles, defiles, sharp turns, etc., ordinarily not considered obnoxious to civilian traffic. Faulty route selection or failure to keep a suitable route reasonably free from traffic congestion can nullify the mobility and, consequently, the weapon. In connection with movement of artillery columns it is of interest to know that the complete horse battalion, less trains, is about three-quarters of a mile in length when closed up. This increases to a mile or more when intervals in the column are increased. The motor battalion, less trains, travelling with an allowance of 50 yards per vehicle, has a road space of about two and one-quarter miles. With trains the column length is increased to almost three miles. If the road space allowance per vehicle is increased to 100 yards, the column length, trains included, is about five and one-half miles.

Liaison: This subject can be considered as two types, Command Liaison and Combat Liaison. Close liaison of both types is an absolute necessity for proper functioning of the cavalry-artillery team. Without this linking of the supporting and supported elements, coordination of fires and missions is a matter of chance, whereas certainty is essential.

Command liaison is obtained on the march by the commander of the artillery in the column moving with the column commander. It is well for the artillery commander to have a reconnaissance detachment readily available. An artillery liaison section, of which there are two in each battalion, habitually accompanies the advance guard of a column. The artillery commander has radio communications with his liaison section and with his battalion constantly during the march. When in bivouac or in action, command liaison is accomplished by the location of the artillery battalion command post near that of the supported brigade, by wire communication run by the artillery between two command posts or by the presence of a liaison officer of the artillery battalion at the brigade command post. Any or all of these may be used. This liaison must be effective.

Combat liaison is accomplished by the judicious use of liaison sections, two of which are organic in each battalion. These sections usually consist of an officer and four or five men. A sergeant is second in command. As the liaison sections should have greater mobility available to them than that of the supported unit, all sections are furnished motor transportation. Sections from the horse battalion have single mounts as well. For communications the section has radio, messenger and visual means at hand. Wire can rarely be made available by the battalion in cavalry action. The personnel of the section must be well trained and thoroughly competent. Inexperienced officers and men are useless on this task in combat. Knowledge of the sections missions, namely (a) to maintain contact with the front line or advanced elements of the supported units, (b) to get information of the enemy and our troops to the artillery commander, (c) to keep the supported commander advised regarding the possibilities of artillery fire, (d) to get fire when needed and to observe and adjust this fire when necessary, immediately brings out the above points. As casualties are heavy in these sections, it is a hazardous task where the best physically, mentally and professionally are none too good.

Customarily a section accompanies the advance guard of a combat team column when action is imminent and one moves with the advance elements of the motor column. During combat, a horse battalion sends a section to each regiment of the supported brigade. The use of the liaison sections of the motor battalion depends on the situation, though they are ordinarily available to be sent to the light artillery battalions. The commanding officer of the motor battalion places his command post near that of the division artillery whenever practicable.

The Division Artillery Commander establishes his command post near the division command post. In his capacity as division staff officer he and his assistants maintain close contact with all sections of General Staff and Special Staff. The Division Signal Troop maintains a line between the two command posts. It is a mistake to place these two command posts immediately beside each other as congestion is bound to result. A separation of two hundred yards is not excessive.

Communications: As previously mentioned, wire (including buzzerphones), radio, visual and motor, mounted and dismounted messengers are available to the artillery. These facilities are available to all echelons except that the howitzer batteries do not have buzzerphones and that the type of messenger available depends on the type of transportation available in the battery.

The Division Artillery Headquarters has wire communication with Division Headquarters (furnished by the Division Signal Troop), with the 105-mm. battalion (run by Artillery Headquarters) and where possible with the light battalions (installed by Artillery Headquarters). The Artillery Headquarters has a radio in the Division net. It also controls an artillery net which includes the three battalions and one or two headquarters sets. When the artillery commander leaves his command post for other than routine inspection purposes, he habitually is accompanied by a radio which operates in the artillery net. The artillery execu-

tive officer maintains a similar set at the artillery command post.

Each battalion headquarters runs wire lines to its batteries which in turn establish whatever internal wire system is required by the situation. The battalion liaison sections rely primarily on radio. Unfortunately, at present, voice sets are unsatisfactory in many situations while a ket set will not allow constant communications until suitable "all terrain" transportation is devised. Visual signalling is generally confined to the howitzer batteries where it is used as a secondary means. Messengers are used freely in all echelons.

A recent step is the addition of radio sets to howitzer battery equipment. This should prove invaluable as the battery observers must be free to move at will to maintain observation. Early artillery support for the cavalry will not have to wait upon the arrival of wire. Changes in observation posts will not be based partially on the feasibility of establishing telephone communications. This independence of wire in the fast moving cavalry situations is a big step forward for the battery commander. These battery sets are primarily for fire control purposes. The necessity for code is limited. Simple prearranged codes meet practically all requirements. Similarly throughout the division artillery, simple prearranged radio codes are sufficient for most situations. The artillery must avoid long encoded messages without violating radio principles.

Fire Control: In mobile situations, the battery is the fire unit. When the entire battalion is in action, the battalion commander exercises a varying degree of fire direction over his three howitzer batteries, depending on the situation. This control is exercised through the command, staff, communications and survey facilities furnished by the Battalion Headquarters Battery. In stabilized situations our scheme of battalion fire direction can be used. To be assured of effect, fire must be observed. This observation might be terrestrial or air. Ground observation is highly desirable. This is the task of the battery observers, who establish observation posts at points of vantages and of the liaison officers who act as advanced observers. Air observation and adjustment of fire is desirable for fire at extreme ranges or when the target cannot be seen by terrestrial observers. Map data can be used to direct fire when the gun position and the target can be located on a map, chart or air photo. This fire should be observed whenever possible, as the effectiveness of any unobserved fire is in doubt. A map with not less than a 1/20,000 scale is desirable for this purpose. The value of the map for fire control purposes decreases rapidly as the scale decreases.

While to date no survey and meteorological section has been assigned to the Division, it is felt that, due to the rapid strides that have been made by sections of this type in turning out accurate data and valuable survey information quickly, one will be added in the near future.

A point of great importance for the cavalryman to bear in mind is that the artilleryman must be kept constantly abreast of the situation in order to be able to plan his tactical employment and to foresee and plan his fires. In the attack and defense, prearranged fires, arrived at by consultation between the cavalry and artillery commanders, are often used. In the attack, preparations consisting of concentrations (areas of fire), fired in advance of the attack, are placed on suspected enemy strong points. In the defense, counter preparations are placed on suspected assembly area, routes of advance, defensive weaknesses in advance of the enemy attack. Timely information will often warn the artilleryman of the approach of targets of opportunity (targets of short duration). In all cases the artilleryman must be kept informed, not only regarding the enemy situation, but generally equally important, of the location of our advanced and flank elements.

Another point of great importance, which combines mobility and fire control, is the ability of the artillery to shift fire through large changes in direction and to fire at large changes of ranges in comparatively short periods of time. Changes in direction are usually effected only by natural and artificial obstacles. The maximum effective ranges are 75-mm. howitzer—8,000 yards, for the 105-mm. howitzer—11,000 yards. Any shorter ranges, can be fired unless natural or artificial masks (hills, buildings, etc.) intervene. The trajectories of both guns are of such high angle type that few dead spaces will be found.

Ammunition: This is frequently referred to as the reserve of the artillery. It is true that guns without ammunition are worthless. The types of projectiles available are high explosive shell, shrapnel, smoke shell and gas shell. The proportions of each to be carried are announced in a field order. Of the four, high explosive shell is the favorite. It is a task of the artillery battalion commander to keep ammunition up for his guns. For this task, he has the Service and Ammunition Battery. This battery is kept in rear of the battalion area in a place of concealment except while servicing the batteries. As far as practicable, its work is done under cover of darkness. In addition to ammunition, it handles all battalion supplies.

The Division Artillery Commander through the S-4

and ammunition officer maintains close touch with the ammunition situation and allots ammunition to battalions, within credits authorized, according to the situation. If necessary, ammunition sections may be assembled for specific missions or may be directed to assist in the supply of other battalions.

In the light battalion we say that 300 rounds per gun is a day of fire. For the 105-mm. howitzer, 225 rounds per gun is taken as the day of fire. These figures are merely units of measure and do not signify the capacity of the gun. Each 75-mm. howitzer battery carries 528 rounds or 157 rounds per gun. The ammunition section of the service and ammunition battery can carry approximately 1,680 rounds, about 140 rounds per gun, bringing the total available to the battalion commander up to a day of fire.

In the 105-mm. battalion, each battery carries 300 rounds, 75 rounds per gun. The ammunition section of the Service and Ammunition Battery carries approximately 150 rounds per gun, making about a day of fire available.

The ammunition sections, immediately after dumping their loads, refill at a dump for artillery ammunition which is established in the division rear area. This ammunition supply is usually regulated by Division through the Ordnance Officer.

Though the ammunition supply presents no problem on paper wars, under actual conditions when the hauling distance lengthens, the roads are torn up and deep in mud, the drivers tired, traffic congested, trucks have been lost, artillery ammunition supply becomes a problem which requires careful planning and can readily be a cause of deep concern.

Antimechanized Defense

Each battalion has an antitank platoon which includes six 37-mm. antitank guns. This is a motorized element capable of rapid movement on roads. It also has excellent cross country ability. The situation and battalion position ordinarily determine its use. The battalion also has nine .50 caliber machine guns in its antitank platoon. These also have motor transportation. The howitzers can be used for direct fire against mechanized elements in a close defense of position. They can also be used to place fire on avenues of mechanized advances. The artillery must always be prepared for all around defense of the battalion areas. With this in view it is frequently necessary to sacrifice some terrain features, which have been considered highly desirable, in order to take advantage of natural defense against tanks.

Defense Against Aircraft

The artillery must rely heavily on passive means such as dispersion, concealment and camouflage. It has been found that open formations, which make the horse artillery a poor target, are practical in open country. In wooded country, dispersion and concealment are used. The horse artillery must never be caught on the road in a compact formation. In such a formation, it is particularly vulnerable. When in position, the several elements of each battery are well scattered, and concealed or camouflaged where possible. The motor battalion employs similar passive means, but relies more on greatly increased space between vehicles to give dispersion when on the road. Natural means of camouflage are habitually used. Positions are rarely occupied long enough to permit extensive camouflage or fortification. The only active defensive means available are the forty-seven .50 caliber machine guns when they are suitably mounted. These machine guns are distributed through the Division Artillery as indicated in the preceding weapons table.

Summary

A summary of a few points for artillerymen and cavalrymen of the Division to keep in mind seems appropriate in closing.

The artillery must preserve its mobility, not only for the first move, but also for subsequent moves.

There is no rule of thumb which will cover the use of artillery in all situations. Its ultimate employment depends on the situation at hand.

The effective range of the 75-mm. howitzer is about 8,000 yards. That of the 105-mm. howitzer about 11,000 yards. Even if the artillery is not in sight they can probably shoot from where they are. Small displacements are not justified.

Adequate ammunition supply must be assured.

Radio within the artillery must be considered one of the primary means of communication. Particularly for liaison, the artillery has to make it work.

The supported unit must keep the artilleryman informed and must remember him in conferences and orders. Similarly, the artilleryman must pass his information on to the supported unit.

Liaison cannot be too perfect. Without it, coördination is left to chance.

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CROSSING RIVERS

By Colonel Harry D. Chamberlin, 2d Cavalry

RIVER crossings by horse cavalry have been discussed many times, but relatively few have been accomplished. In fact a high percentage of those few have been executed under such artificial conditions—that is, stripped saddles, no pack animals and frequently no weapons—that little was learned. In order to be effective, river crossings must be practiced under conditions as similar as possible to those which probably will be encountered in actual campaign.

Last fall, the 2d Cavalry furnished a war strength platoon with attached light machine guns for the purpose of demonstrating a river crossing to the Basic Horse and Mechanized Class, then at The Cavalry School. This demonstration was ably directed and staged by Captain Henry R. Westphalinger, a member of the Academic Division staff, Department of Tactics, while First Lieutenant Wm. F. Beaty, "E" Troop, 2d Cavalry, commanded the platoon. (Below.)

The first essential in training of this type, just as in any other training, is much practice. As far as the men are concerned, if they are good swimmers and soldiers, their rôles are readily learned. For average horses, however, quite a bit of preliminary work is required. They must be accustomed to enter water boldly and to swim calmly. All horses, if properly handled, will quickly learn to do this.

Preliminaries

The first step can be accomplished quite easily by the use of a large pit, similar to the dipping vats used in Texas for killing ticks. Essentially, it should be narrow enough to maintain the horse's sense of direction and long and deep enough to require a short swim of approximately one dozen strokes. In addition, the approach and exit should be firm, gently shelving and not slippery. The use of such a vat tends to make the horses

Figure A: A portion of Troop E, Second Cavalry, swimming Smoky Hill River, October 11, 1940.

Figure I: Two-man float, consisting of saddle equipment, pommel and cantle loads, and rifles, for two men.

water-conscious, bold and strong swimmers, and eliminates the possibility of accidental drownings. If a good stream, river, or lake exists nearby, all horses can be taught to swim quite as well in them. The vat is simply a good idea if available at a post for the first lessons, or to build where there is no natural swimming place at hand. These first lessons should be carefully supervised and conducted by the best horsemen. A timid, poor horseman spoils a horse at any kind of training.

After the preliminary training described above, those horses which have progressed suitably should be required, where it is feasible, to swim larger bodies of water, and longer distances. At first it is best to "herd" groups across rivers or lakes, the herders riding or swimming alongside the leading animals known to be strong swimmers. Snaffle bridles or halters only are used for this first practice. Feeding the horses on the opposite bank as soon as they land encourages and interests them in their work. This reward also aids in teaching them to swim a straight course. It is well to bear in mind that horses are attracted to groups of people or other horses. Consequently, if spectators are present or some horses are already on the far side of the stream they should be placed at such a point that the horses, when attracted to them, will swim in the proper direction.

Upon graduation from this intermediate stage, the horses next should be taught to cross stretches of water while saddled and equipped. Again, the most capable horsemen should give the first lessons, and *stripped* saddles, snaffle bridles and halters are used initially. It is advisable to fasten the snaffle reins to the square ring of the halter rather than to the snaffle bit. At all times when riding into the water, the men should use their legs strongly in order to drive the horses boldly ahead. Timidity on the part of the rider simply teaches balkiness. As soon as the horse walks to a point over his depth and must start swimming, the rider slips off on the up-current side and swims alongside his mount, holding onto a stirrup strap, saddle pommel, or the halter-shank which is left knotted loosely around the horse's neck. If the horse attempts to turn downstream away from the rider, the latter gently pulls the horse's head by the rein towards himself. If the horse turns toward the rider, he may be diverted in the proper direction by splashing water against the side of his face or pushing his head in the opposite direction. The rider may also reach across the withers and pull the horse's head in the desired direction by the far rein. After a horse has been taught to swim straight, the rider may allow himself to be towed by hanging to the tail. With horses that swim well, men may remain mounted in swimming over short distances. However, horses are like humans—the fat, round ones are very buoyant, while the thin, muscular ones of high specific gravity have great difficulty in swimming under a load. *It is much better to teach all soldiers to swim alongside the horse, or by holding onto his tail, because this is the only feasible method which will avoid overturning and drowning some horses if the swim is long or difficult.*

When the horses swim well, lightly equipped as described above, the full packs should be added, along with arms, and tactical exercises may be conducted with the river-crossing as an incident thereto.

Combat Situation

In a unit the size of a platoon such as was used at Fort Riley, a security detachment of from six to eight men is first sent across, their crossing being covered by suitable fire power. This detachment should logically be a part, or all, of the advance guard. Of course local, all-around security on our own side of the river is understood to have been effected upon halting. Since, in the initial bridgehead to be formed, speed and fire power are highly desirable, this advance group must have both. For speed, they should either leave pommel and cantle loads on the saddle, or drop them off to be brought across the river by others and only men with powerful swimming horses should form the detachment; horses that can swim with their riders mounted. No time should be taken for safety precautions advocated later on for troops that follow the bridgehead group or groups. For fire power, all must carry rifles, pistols and ammunition. The rifle is normally carried in the rifle boot. If the horse is known to be especially expert and bold at swimming and the distance is short, the rifle may be carried overhead to keep it dry, while

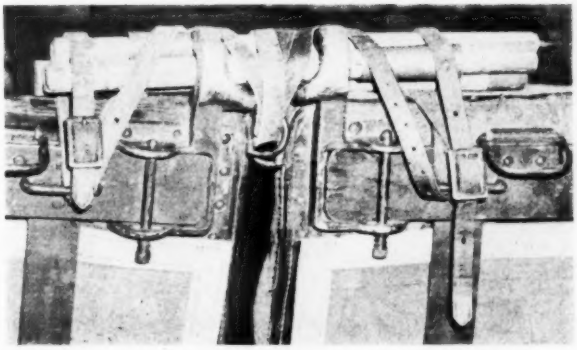


Figure II: Two adjacent Pack Saddles, showing method of binding together, using folded tent pole and two coat straps.

the soldier remains mounted. Pistol and cartridge belt are carried in the usual place, buckled about the waist. In this connection experiments indicate that both rifle and pistol ammunition may be submerged in water as long as twenty-four hours and still fire. As a matter of fact, it appears likely that a submersion of months will not damage the cartridges. The important point, however, is to be certain that all the water is blown out of the barrel before the weapons are again fired. Also they must be thoroughly cleaned at the earliest opportunity.

Upon the successful crossing of the initial covering force and their establishment of a bridgehead on the opposite side, the movement of the remainder of the patrol may be begun. First, means for floating the packs—cantle roll, light machine gun, administrative, etc.—must be provided. There are several ways of carrying these across. If lumber is available, rafts may be made. This, however, is a condition so seldom encountered that it may be disregarded for instructional purposes. Fortunately, enough material is carried within troop organizations in the cavalry regiment to construct "canoes" or "floats" which will easily take care of all equipment and some personnel.

Construction of Floats

The two-man float is simply made of two rifles, two shelter halves and one coat-strap. The rifles, bound together in the form of an X, form the framework. The two shelter halves serve to keep the water out. The lighter material, such as blankets, saddles, saddle bags, grain bags, etc., are first placed in the center of the shelter halves, these latter being placed one on top of the other, triangular flaps at opposite ends. The edges are then folded carefully up and bound to the rifles, thus forming the float. *See Fig. I.* Its main purpose is to carry equipment across the river in case horses have become casualties, or to carry rations, ammunition, etc. The men in charge of equipment swim across, pushing the float in front of them. If care is

Figure III: A single "canoe," showing details of lashing shelter halves to framework. The lower cord, which passes through saddle rings, is tied in position first before running the cords through the buttonholes. Note coat straps around corners.

Figure IV: Soldiers of Troop E, Second Cavalry, launching float made of two sections of the 4-pack "canoe" described in text.

used in making the float, the contents should be relatively dry and undamaged upon reaching the shore.

The large float, designed to carry equipment from the light machine gun platoon, administrative packs, etc., is conveniently built by not less than four men. The material necessary consists of four Phillips pack saddles (less harness), five shelter halves, ten coat straps, 8 tent poles (shelter half), 5 shelter half ropes. The packs must be equipped with the new type, curved foot rest. The general procedure is as follows: 1st Step; Lay out and button together 2 shelter halves, end to end, triangular flaps at either extremity. Place another shelter half lengthwise over the buttoned seam. Place 2 more, buttoned as before, on top of the first three. 2d Setup; Place 4 pack saddles, in tandem and upside down, lengthwise on the 5 shelter halves. The large section of one of the tent poles is inserted in 2 adjacent curved foot rests and securely lashed in place by 2 coat straps. *See Fig. II.* This is repeated for each of the 5 other connections. A tent pole is then lashed across either end, completing the gunwhale of the canoe. If available, a sapling is lashed securely along the bottom, in the arches of the saddles, forming a keel. In case none is available, the saddles may simply be lashed together at the arches. 3d Step; Bring the shelter halves up all around the saddles, folding neatly at the corners. Lash them securely to the framework with the tent ropes. Be sure the tent poles at either end are securely locked at the joints. *See Fig. III.* 4th Step; If sufficient pack saddles are available, construct a second canoe and lash the two together, side by side, thus increasing their stability. The pair will carry approximately 1,000 lbs. and will stay afloat from 45 minutes to an hour. However, it is well to make some provision for bailing it out, as a little water is bound to seep through the seams. This float may be pushed across by men swimming, towed by swimming horses, or by ropes or wires from the opposite shore. *See Fig. IV.*

Now that we have the equipment ready to move, the main body should cross the river, in small groups, with

Figure V: Scout Car being ferried across on platform built on two engineer pontoons. An outboard motor (not shown) was mounted on one of the pontoons. The motive power, however, was furnished by sweeps and a rope stretched across the river on which the men pulled. Upstream view.

floats and extra horses. It is sometimes desirable to herd the extra horses across if the preliminary training has not been thorough. Bear in mind that a horse with a pack on its back, once tipped over, is gone.

After the main body has crossed, assembled, and reorganized, the security detachments (rear guard) may cross, and the march may proceed.

In many cases, one or more scout cars will accompany the unit. If it is impossible to find a bridge or suitable ford for these, they will have to be ferried across on engineer equipment, as shown in *Fig. V*.

Precautions

Of course, in peacetime practice and training the big thing in a river crossing is SAFETY. In a war, the main consideration is given to dangers from the enemy. These are avoided by proper tactical dispositions. During peacetime, we must consider dangers from natural sources. Since an ounce of prevention is worth a pound of cure, the obvious steps to take—during practice crossings—are: First, to organize a lifeguard force in several boats, composed of good swimmers, at least two to a boat. Each boat should be equipped with boat-hooks, life preservers, rope, oars, and outboard motor if possible. Second, each trooper should wear a kapok jacket

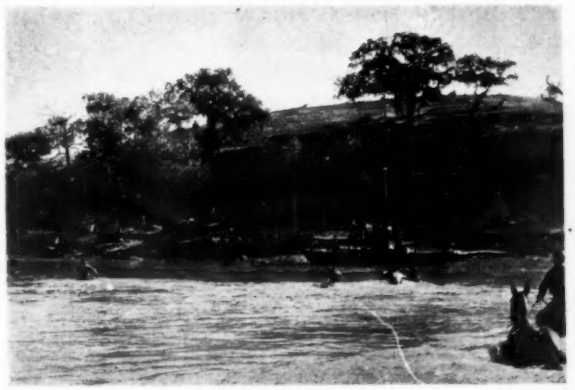


Figure VI: The landing stage for the Scout Car ferry. The horses, in general, swam towards this point because of the group of men there.

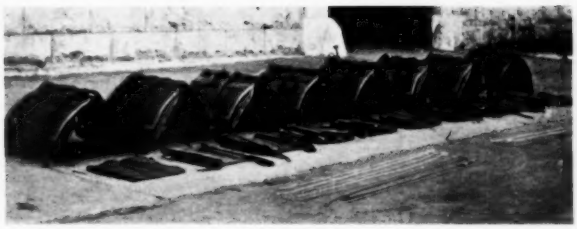


Figure VII: Layout of material necessary for the construction of two 4-pack canoes, for the construction of float illustrated in Figure IV.

(obtainable from the engineers) and a campaign hat. A man may easily be struck on the head by a struggling horse, and the hat will break the force of the blow. The jacket will keep him afloat if knocked unconscious.

In either a practice crossing or a crossing during maneuvers, when the weather is cold, some means should be provided for the men to dry and warm themselves. A tent with a heater—which may be improvised from a No. 10 can and gasoline or alcohol—should be set up on the far side of the river. If possible, dry clothing should also be provided.

After assuring maximum safety for the men, attention should be directed towards safety for the horses. First, all curb reins should be removed. They should never be knotted about the horses' necks. They may be used as tow ropes, for lashing, as improvised breast straps, or for any other suitable purpose. Second, snaffle reins should be unbuckled so the horse can not get a foreleg caught in them. It may be well, in addition, to fasten the snaffle rein to the halter D-rings rather than to the bit, as previously mentioned. Some men will involuntarily "tighten up" to such an extent that they may pull the swimming horse over backwards. Third, cinches must be good and snug, since saddles tend to slip back much more in water than at any other time. On herring-gutted horses a breast strap, either G.I. or improvised, should be used. Fourth, stirrups must be crossed over the saddle and all loose strap ends well secured, so that the horse will not become entangled while swimming. Fifth, men must be instructed NOT to use the reins as a handle, NOT to try to turn the horse abruptly, and NOT to pull led horses' heads around to the rear if they swim ahead. They must be turned loose and if some men are riding swimming horses they must slip off (on the upstream side) at the first sign of trouble, or when horse's head is about to go under water. They may hang on to mane, saddle, stirrup, or tail, but never to reins. If necessary, let go entirely and swim ashore. It is far better for all men to be taught to slip off and swim alongside their horses holding to a stirrup or strap.

If horse cavalry is to justify the many claims made for it, we must give much more thought to the subject of swimming rivers. With that thought must go plenty of practice to enable the crossing to be carried out smoothly, quickly, and efficiently. This work should be compulsory in all cavalry commands.

Supply of Horse Cavalry Regiment

By S-4

EDITOR'S NOTE: *This is the first of a series of articles on the subject of logistics for cavalry.*

* * *

WHAT is meant by the term "supply" as ordinarily used? In its larger sense we know that the term is meant to cover the furnishing of every item of equipment, clothing, arms, ammunition, transportation, subsistence, forage, gasoline, shelter; in short, any material requirement of the troops to insure their being properly organized, equipped, and maintained in a state of readiness for field duty. The greatest portion of this type of supply takes place in garrison, and in this article we will not concern ourselves with it. Instead it is our purpose to discuss the "supply" of the horse regiment in campaign: on the march, in bivouac, and in combat situations.

Let's start with the ideal situation, one which would delight the heart of any commander and one which no commander can ever honestly expect to have the good fortune to meet. Our regiment is at full strength, organized in accordance with Tables of Organization 2-11, approved by the War Department November 1, 1940. Not a man is on sick report, all animals are in excellent condition, and every piece of equipment as authorized by Tables of Basic Allowances is on hand and in serviceable condition. Our regiment "got this way" in a rest area where as a part of the division it received replacements and was reëquipped and trained for further combat operations, believe it or not. And just as life was taking on a rosy hue along came orders for the division to move up into the combat zone, and our regiment was required to operate a day's march in advance of the remainder of the division. This situation will serve as well as any other to outline what the regimental S-4 is up against and what he must do as a member of the staff team in maintaining the morale and combat efficiency of the regiment.

CLASSES OF SUPPLY

What classes of supply are we interested in now? Here they are:

Class I: Rations and forage.
(Class II: Individual and organization equipment.)
Class III: Gasoline and oil.
Class IV: Medical supplies for the surgeon.
Class V: Ammunition.

SUPPLY VEHICLES

What do we have in the way of equipment in which to carry these supplies, and with which to effect resupply as required? Here it is:

21 Trucks, 2½-ton, cargo

3 Trucks, ½-ton pick-up (medical detachment).

Ration and ammunition packs in each troop are not mentioned here, as we are principally concerned with supply of the regiment as effected by S-4. The twenty-one trucks are divided into two classifications: 11 combat and 10 kitchen trucks. They are operated by the personnel of the transportation platoon under the general direction of S-4. Normally the trucks are allocated to the troops of the regiment for use and loading as follows:

Troop	*Combat Trucks*	*Kitchen Trucks*
Rifle troops (1)	6	6
Machine-gun	2	1
Special weapons	2	1
Headquarters and service	1	2
	—	—
	11	10

The medical detachment trucks operate under the direction of the surgeon. While they carry a certain part of the medical supplies, ordinarily they are not used for resupply of medical and surgical items. Usually these items will be supplied through medical channels and without its being necessary to use regimental truck transportation; however, there is always the possibility that on occasion truck transportation may have to be used for this purpose, and in the end it is S-4's responsibility that the surgeon's supplies are available in required quantity.

REGIMENTAL SUPPLY

What supplies should the regiment have when it marches at daylight tomorrow morning?

Class I (rations and forage) comes first. Now that we are equipped with 2½-ton trucks we have enough cargo space to enable us to operate on the ideal ration cycle: beginning with supper. By this we mean the rations and forage received tonight (supplies will usually be delivered under cover of darkness in the combat zone) will be for consumption during the twenty-four-hour period starting with supper tomorrow evening. In other words, today being Monday, the rations and

forage we receive tonight will be for supper tomorrow (Tuesday) and breakfast and lunch on Wednesday. Where will breakfast and lunch for tomorrow be carried? Breakfast will be in the bellies of the men and animals, and lunch will be that bane of all cooks' lives and a waste of rations—a "cooked meal" carried in the saddlebags or on the vehicles for each man, with the noon feed of grain on the saddles for all animals.

The full ration, the one beginning with super tomorrow evening, may be carried in one of two different ways depending on the situation. If combat is not probable and the regimental commander can foresee no reason why the trucks cannot be made available to troops upon or shortly after their arrival in bivouac, then the whole ration is usually carried in the kitchen trucks. The grain may be divided between the combat and kitchen trucks as necessary, or one feed (evening) may be in grain bags on the saddles with the noon feed. In the event the regimental commander cannot clearly foresee the situation, or combat is possible during the day's advance, then the evening meal (supper) should be carried in the troop ration packs and the evening feed of grain on the saddles. It is S-4's duty to study and understand the tactical situation thoroughly and submit recommendations to the regimental commander on this feature. The requirement is that rations and grain must be available to the troops at the time necessary to enable them to serve a hot evening meal to the men and grain to the horses shortly after arrival in bivouac or suspension of combat. If it cannot be definitely foreseen that the trucks will be able to come up promptly, then the use of the ration packs is indicated.

It will be noted that hay (long forage) has not been mentioned. We do not have sufficient cargo capacity on our trucks to enable us to carry a day's supply of hay. Hay that is received during the night should be immediately fed to the animals. The earlier it is fed the better, as they should be given the opportunity to consume the whole hay ration during the night. Because of the uncertainty of delivery of hay cavalrymen take every opportunity to graze their animals during campaign.

While we are on the subject of Class I supplies we will take the opportunity of discussing the types of rations, and those we should carry. There are four types of rations.

Type A ration consists of those articles prescribed by the commander of the field forces. It generally parallels the garrison ration, and the meat and vegetable components are fresh. This ration is issued to troops in rear areas.

Type B ration consists of the same general components as Type A, except that the perishable items are issued in processed form to avoid spoilage. This ration is issued to troops in the combat zone.

Type C ration consists of six cans of prepared foods. Three cans have crackers, coffee, and sugar; the other three have prepared meats and vegetables packed quite solidly. The contents of the meat cans are tasty and can be eaten either "as is" or heated. If desired water can be added and a very nourishing soup prepared. This ration is issued to the division on the basis of one for each man in the division, and all are usually carried in the trucks of the division train. They can, by direction of the division commander, be issued to regiments and thence to troops to be carried in the kitchen trucks, or when directed by the regimental commander issued to and carried by the individual men. While neither this ration, nor any other, is termed an "emergency" ration, still it is regarded in practically the same light in which we used to regard the "iron ration."

Type D ration consists of three four-ounce bars of prepared chocolate. This ration is issued, carried and consumed similarly to the Type C.

In the case of our regiment under the situation assumed, S-4 should recommend to the regimental commander that one Type C and one Type D ration for each man and officer of the regiment be procured from the division quartermaster and carried on the troop kitchen trucks. If this is done we find that the regiment will depart at daylight tomorrow (Tuesday) morning (after breakfast) with:

Type B rations to include Wednesday's lunch.

Type C and D rations sufficient for two additional days if conditions require their use.

Grain for all animals to include the Wednesday noon feed. Later we will discuss the resupply of these items.

* * *

Class III (gasoline and oils) comes next. How much should we have in the regiment? Each and every vehicle, truck, scout car and motorcycle should have its operating tank filled to capacity. This is assumed to be sufficient to operate the vehicle during one day of normal operation. In addition there is carried on the trucks in ten-gallon containers a sufficient supply to refill the operating tanks of all vehicles in the regiment once. Thus we normally have a sufficient amount on hand to operate all vehicles for two days. All operators of vehicles must be trained to service their vehicles immediately upon completion of a day of operation in order to guard against the possibility of an unexpected movement catching them without a full supply of gasoline and oil. The prudent operator will service his vehicle every time he is near an available supply of gasoline and oil. It is the responsibility of S-4 to insure that vehicles are serviced, and he must be careful that the troop or platoon commanders concerned are promptly notified where the required supplies are available to them. It will be apparent that the regiment will depart tomorrow morning with sufficient gasoline and oil to operate all vehicles during Tuesday and Wednesday.

* * *

Class IV (medical supplies). These consist of many items too numerous to mention. The amount carried is

assumed to be sufficient to care for the needs of the surgeon and veterinarian during a combat action until additional supplies can be made available through the evacuation channels of the division. Those supplies on hand in the regiment are carried in the pack sets provided for that purpose, and some in the pickup trucks of the medical detachment. S-4 normally will not be called upon to obtain these supplies except in emergency. It is his duty, however, to assure himself by inquiry of the surgeon that the required supplies are on hand. This puts S-4 in the position of being able to advise the regimental commander of any phase of supply in the regiment.

* * *

Class V (ammunition). Tables of Basic Allowances prescribe the number of rounds of each kind of ammunition to be on hand within the regiment and where it is to be carried; on the man, with the gun, or in what we used to call the combat train, now known as the ammunition train or trucks. In our tables of organization these trucks are still referred to as combat trucks.

In general terms the amount carried on the man or with the gun is considered to be one day of fire. In our arm it is better expressed as being sufficient to meet the requirements of combat until the replenishment agencies can start to function. In our ammunition (combat) trucks a sufficient amount is carried to replenish once the amount carried on the man or with the gun, except for those weapons which arm the scout cars and trucks. This latter statement is not literally true in that a part of the ammunition listed as to be carried by the combat train is carried on the ammunition packs of the troop headquarters sections of the rifle troops and the machine-gun troop instead of on the combat trucks allocated to those troops. The ammunition carried on scout cars and trucks is estimated to be sufficient to meet the requirements of their weapons for the same period that carried by all means within the regiment will meet the needs of the other weapons. Our regiment will then march with two days' fire for all weapons, or a supply sufficient to meet the needs of combat until the replenishment agencies make a further supply available; express it whichever way you prefer.

Transportation

The transportation of the supplies as outlined above will not serve to tax the cargo capacity of the twenty-one trucks we have for this purpose. But there is all the combat equipment, kitchen equipment, and authorized baggage to be transported. Besides, if there is available capacity on the trucks the regimental commander will order the cantle rolls of all mounted men to be carried on the trucks, thus relieving each riding horse of about nine pounds of weight. In any event the trucks known as combat trucks will be carrying mixed loads consisting of ammunition, tools, chests, grain, baggage, gasoline, oil, cantle rolls and miscellaneous small items. The kitchen trucks should be restricted to carrying the kitchen equipment, rations, and water, with the possible exception of one feed of grain in sacks.

It is unfortunate for us that we do not have a sufficient number of smaller trucks additional to the present number of 2½-ton trucks to transport all the ammunition carried by trucks, separately. At present the combat trucks carrying their miscellaneous items must be carefully loaded in such manner that the ammunition is readily accessible at all times. And in the event of combat which requires a replenishment of ammunition from the rear areas, the loads of equipment must be combined so as to release trucks to haul the resupply. Either that or the equipment must be dumped temporarily or hauled back and forth, thus reducing the cargo space available for ammunition. The writer believes there is no more certain method of losing equipment of a cavalry unit than to dump loads during a cavalry engagement. That method should be reserved exclusively to the units of low mobility. The answer to these difficulties, and they are just that, is to be found in having a sufficient number of small cargo trucks of low silhouette to carry all ammunition. They should be in sufficient number to permit loading with duplicate loads, at least within squadrons, to guard against the destruction or disablement of one truck meaning the complete loss or interruption of ammunition supply for any unit. Of course we can function with our present equipment, and each regiment will have its own method of handling the problem. Some will combine troop loads initially—undesirable—and thus release trucks for carrying ammunition solely. But the number of trucks so released will be small, not sufficient to permit carrying duplicate loads, with the attendant danger of the destruction of one truck proving disastrous. Then there is the added difficulty of issue of ammunition to more than one unit either before or during combat; unnecessary confusion and delay. Other regiments will not combine loads until combat is imminent or actually joined; again unnecessary confusion and delay; while still others will either dump loads or transport equipment back and forth each time a truck makes a trip. And picture in your mind's eye the difference between a train of large 2½-ton trucks with their high silhouettes and cumbersomeness following a regiment and supplying ammunition during combat, and a train of small handy trucks doing the job. Flexibility, mobility, and efficiency all belong to the smaller trucks.

Rifle Troops

But let's get back to how this ammunition is carried without regard to what type of truck is used. In the rifle troops there is but one combat truck; therefore all the truck-carried ammunition will be on that one truck. Each troop has one cavalry type bandoleer for each rifleman in the troop. These bandoleers are loaded by troop personnel and the loaded bandoleers are car-

ried in the ammunition truck. Each bandoleer has 88 rounds of rifle ammunition and seven rounds of pistol ammunition. When combat is imminent or probable the bandoleers, upon direction of the regimental commander, are issued to riflemen. They can be carried either around the horse's neck or slung across the shoulder of the individual. When so issued each rifleman will have 176 rounds of rifle ammunition and 28 rounds of pistol ammunition. In each rifle troop headquarters section there are two ammunition packs. They are each loaded with 1,800 rounds of machine-gun ammunition in belts, a total of 3,600 rounds. Like the bandoleers these ammunition pack loads may be carried in the truck, being transferred to the pack animals at the same time and under the same conditions which cause the issue of bandoleers to riflemen. Or in some regiments it is habitual to carry these loads in pack at all times. Take your choice. All other ammunition carried on the trucks will be in boxes.

Machine Gun and Special Weapons Troop

In the machine-gun and special weapons troop there are two combat trucks each. It is a matter of regimental practice whether all ammunition to be carried on trucks is loaded on one truck and all equipment on the other, or whether the ammunition is divided into duplicate loads with each truck carrying a part of the equipment and baggage. The writer learns to duplicate loading to guard against possible complete destruction and to gain flexibility, but there will be the attendant difficulty of combining loads when replenishment becomes necessary. This can be avoided by loading all ammunition on one truck and all equipment on the other. Again, take your choice.

In the machine-gun troop alone there are in the troop headquarters section twelve ammunition packs. Each pack load consists of 1,500 rounds of machine-gun ammunition, belt-loaded, a total of 18,000 rounds. As in the rifle troops, this ammunition may be carried on the trucks until the need for its transportation in pack is evident, or habitually carried in pack, according to regimental practice. The balance of ammunition carried in the trucks should be carried loaded in belts or bandoleers according to its purpose.

In the special weapons troop there are no ammunition packs assigned to the troop headquarters section; therefore all the ammunition not on the man or with the gun is carried in the trucks. The same conditions affect the loading of the two trucks as apply to the machine-gun troop. The ammunition for the caliber .50 machine guns should all be belt-loaded; it will be issued in this manner, and the mortar ammunition will be issued in bundles which can be easily transported by pack. That for use of riflemen should be in bandoleers.

Headquarters and Service Troops

In the headquarters and service troop the amount of ammunition carried in the combat truck is negligible under present tables. That so transported should, however, be carried prepared for use according to its purpose insofar as equipment will permit.

* * *

Expressed in general terms, it all totals up to the fact that when the regiment marches it will have two days of supply of all needed items, except for hay, equal in mobility to itself. Hay can usually be obtained locally wherever the regiment may find itself, either by purchase or requisition. Or it may be supplied from the rear, either by division transportation or transported in our own trucks. If for any reason hay cannot be obtained as required, grazing will help, and S-4 will have to "bust a button" to secure a substitute for long forage. But we should not assume this condition will exist, as S-4 in planning for the supply of his regiment will have consulted the division G-4 and the Quartermaster, and those officers will see to it that the division supply agencies do their part.

* * *

The discussion of the supply of the regiment during its advance and in a combat situation will be continued in a subsequent number of The Cavalry Journal. *It is during these phases of operations that we find the difficulties of supply. To meet these difficulties and overcome them to the end that the regiment is adequately supplied at all times requires the ability of a resourceful, energetic and able S-4.*

The Armored Force

War Department's Official Language

"The armored force is the assembly under a single head of all mechanized troops in the United States Army, and combines the infantry tanks with the mechanized cavalry. In modern warfare it is the heavy cavalry of a motorized and mechanized army.

"The form of action of the armored divisions is offensive and aggressive. It sustains surprise by the speed and drive of its tactical movement. It uses its mobility to choose the most favorable directions of attack to reach vital enemy rear areas.

"Its defense is elastic and mobile and characterized by the counter-attack. It does not seek to attack the strong place of the enemy. It places its strength in the weakest place in order to break through and penetrate the rear areas of the enemy.

"Once into these rear areas it fans out to cut communications and supply, and then, by dual development, drive the enemy up into the holding force of the infantry. In this maneuver the enemy has no alternative to save him from destruction.

"The only course left to him is to retreat, yet, in so doing he leaves his flanks unprotected and subsequently his forces vulnerable to destruction."

* * *

While studies have been completed looking toward the establishment of an Armored Corps as a separate arm of the Service, it is quite unlikely that the War Department will ask for any legislation along that line for some time. General George C. Marshall, Chief of Staff, stated recently that while the present arrangement is a temporary one and some permanent set-up will have to be devised eventually, he feels that development can proceed more rapidly under existing arrangements. He said that a statutory change in the arrangement would, of necessity, take some time to establish and the channels would be changed. With the Force expanding into four divisions instead of the present two, he feels that matters will be better expedited by continuing the existing procedure.

* * *

Armored Force Board

A War Department circular issued this week publishes instructions pertaining to the Armored Force Board. Actually the Board was established early last summer. Lt. Col. John D. Kelly, Cav., is president of the Board, and Maj. George W. Read, Jr., Cav., recorder. Under the direction of the Commanding General of the Force, the board has been functioning for some time. Upon its establishment, the Board took over the library, files and studies of the Mechanized Cavalry Board, of Ft. Knox, and the Infantry Tank Board, Ft. Benning, which were turned over to it by the Chief of Cavalry and the Chief of Infantry, respectively. The instructions issued this week state: "1. Station.—The Armored Force Board will have permanent station at Ft. Knox, Ky. 2. Purpose—The purpose of the Armored Force Board is to investigate, consider, and report on such subjects as may be referred to it by the Chief of the Armored Force, and to originate and submit to the Chief of the Armored Force recommendations for the improvement of the Armored Force. 3. Composition—The Armored Force Board will consist of not less than nine nor more than twelve officers of the Regular Army permanently assigned to that duty, and such others as may be temporarily assigned by the War Department or the Chief of the Armored Force from time to time. 4. President and recorder—The Chief of the Armored Force will designate the president of the board. The president of the board will designate the recorder. 5. Control and direction—The Armored Force Board will function under the direct control of the Chief of the Armored Force. 6. Correspondence—Correspondence between the board and the Chief of the Armored Force will be direct."

* * *

1st Armored Division Sets Mileage Record

The 1st Armored Division established a mileage record in the execution of its training program during the month of November, it was announced recently by Major General Bruce Magruder, Division Commander, upon completion of a study of mileage reports.

The Division operated 1,217 vehicles including tanks, scout cars, motorcycles, trucks, a total of 476,056 miles during the month or an average of 18.3 trips around the World. Each vehicle traveled an average of 381.1 miles during the month.

* * *

2nd Armored Division to Receive Portion of Benning's 8,000 Selectees

Approximately 8,000 selective service men are due to arrive at Fort Benning during January for assignment to regular army units at the post. Most will go to the Second Armored Division and the 24th Infantry, large increments for Fort Benning's Fourth Division not being due until early in February.

The Second Armored Division and the 24th Infantry will operate temporary replacement centers, at which the new arrivals will receive thirteen weeks of basic training, largely individual, before joining the units to which they are assigned.

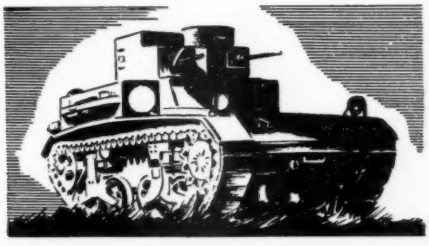
Medium Tank has a radius of 130 miles, with a normal speed of 30 miles per hour

The replacement center of the Second Armored Division will be located in newly constructed buildings in its Cusseta Highway cantonment. There will be a training company for each 162 trainees. Each of these companies will have five officers and 36 regular army enlisted men as its training cadre.

* * *

Personnel for the Armored Force

No change will be made in existing policies with respect to the detail of Regular Army officers to the Armored Force. Regular Army officers who desire to serve with the Armored Force may indicate such preference on the annual statement of preferences or by a separate communication addressed to the chief of the arm or service. Such preferences will not be referred to the chief of the Armored Force, but will be utilized by the chief of the arm or service concerned in connection with recommendations for assignment of Regular Army officers to the units of the Armored Force. Insofar as practicable, chiefs of arms or services will continue to give preference in recommending assignments to the Armored Force to those officers who have had mechanized, motorized, or armored vehicle experience and to those officers who have expressed a preference for such assignment. The War Department states that chiefs of arms and services which are represented in the Armored Force and those charged with the maintenance of Regular Army commissioned personnel for the armored regiments will maintain with the units of the Armored Force the same percentage of officers in the various grades, of officers of comparative efficiency and of graduates of special and general service schools, as are maintained with other troop units of their arm or service stationed within the continental limits of the United States.



Editorial Comment

Cavalry Character

1941 finds nearly all of our national guard cavalry inducted into federal service. Of the approximately 30,000 reserve officers now on extended active duty, approximately 900 are cavalrymen. Thus, the amalgamation of the three components of our peace-time army (Regular, National Guard, and Reserve) has resulted in a coalescent cavalry arm—*the Cavalry of the Army of the United States.* We wear the identical cavalry insignia—our armorial crest. This unity should likewise apply to our training, our thought, our mutual relationship, our character and our personal conduct. Mutual confidence and respect are essential to the successful accomplishment of any coöperative undertaking. Our cavalry of tomorrow depends on what we, individually and collectively, make of it today. Let us be conscious of our cavalry tradition and heritage.

From that period of history known as the Dark Ages, there emerged the Age of Chivalry which was characterized by the revival of high standards of personal honor and integrity. Military men who demonstrated ability as leaders in war, men of upright character and high ideas—courageous, honest, unselfish, loyal and chivalrous men, as exemplified by those whose preëminence in these qualities was recognized by elevation to knighthood—became the leaders in civil and political affairs of that time, and left their imprint of achievement in the traditions and customs which so greatly influenced the conduct of succeeding generations.

Through the centuries since the Age of Chivalry the military profession has cherished and preserved the finest and best of the ideals of that period. The traditions and customs which merited approbation as standards of personal conduct, "an officer and a gentleman," have survived in what is known as "Customs of the Service," which is largely an unwritten code of honor, of ethical standards to which the military leader must rigidly adhere to merit the confidence of his superiors and to command the respect, loyalty and obedience of his subordinates.

As a natural consequence of scrupulous adherence to the highest standards of personal integrity, commissioned officers as a class enjoy an esteem not generally accorded to other persons until the latter have individually demonstrated that it is merited. The word of a commissioned officer is counted as good as his bond. This tradition has so persistently existed in the military service that it is now recognized in regulations and law. The written certificate of a commissioned officer is accepted in military administration in lieu of statements which other persons are required to subscribe to under oath.

For the good of the service and for the protection of the reputation of our cavalry it, therefore, becomes the duty of *every* cavalryman to guard well and perpetuate our cavalry character. By our own high ethical standard of personal conduct and loyalty, only, can we preserve our cavalry trinity—*our duty, our honor, our country!*

★★★

The Journal's Star Contributor

In response to the query, "The article I liked BEST in recent journals was . . . .," on the 1941 proxy cards, a tally indicates that "General Hawkins' Notes" ranks first in popularity.

General Hawkins

General Hamilton S. Hawkins, Retired, is an officer of extensive cavalry experience and sound reasoning, as his valuable contributions consistently have indicated. The Cavalry Association deeply appreciates General Hawkins' interest and coöperation.

Our Chief of Cavalry, Major General J. K. Herr had the highest score for a single article; his "A Survey of Our Cavalry."

The majority of cards merely stated that "All" or "Nearly all" were good. The general and human interest articles were popular.

Nearly every article in recent JOURNALS, however, was mentioned by some as "Best," which proves that we are trying to give all of our readers what they wish. Those in the seven National Guard Horse-Mechanized Regiments, now in the process of reorganization, have requested articles that will be of assistance to them. Similarly, members assigned to horse cavalry and armored regiments are especially interested in their respective fields.

Please write and tell us what you want and send a screed of your own authorship.

Note deadline date on page 1.

* * *

Staff Qualifications

"Untiring industry, helpfulness, self-sacrifice, and self-effacement are the foundation stones of efficient staff service. The staff officer, as such, gives no orders in his own name. He seeks no credit for success gained by his commander on his advice; and conceals his nonconcurrence in plans that have brought disaster. He foregoes opportunities for personal distinction to devote himself to the interests of his commander and comrades; yet, when exposure is demanded, so bears himself that his motives in the former case are beyond question. Tact, good temper, forbearance, alertness, willingness to accept responsibility, reserve, good judgment, and straight thinking not to mention personal valor, would be the conspicuous characteristics of the perfect staff officer."

* * *

To this quotation may well be added: he must possess broad vision, yet be attentive to details; he must be able to coöperate and coördinate; he must have initiative and be progressive; he must be thorough and accurate; he must appreciate the reason for a staff, and have faith in the system.

Annual Meeting

In accordance with the call of the President of the United States Cavalry Association, the fifty-second annual meeting of the association was held at the Army and Navy Club, Washington, D. C., at 8:00 PM, December 13, 1941.

A quorum was present, in person or by written proxy, for the transaction of business.

Parenthetically, of interest, in addition to our present Chief of Cavalry, two former Chiefs of Cavalry were present; namely, Major General Guy V. Henry and Major General Leon B. Kromer.

The Secretary-Treasurer presented and read his annual, previously audited, report and financial statement, which was duly approved. The report indicated that the affairs of the Association are in very satisfactory condition.

The next order of business was the election of officers for the ensuing year.

The following were elected:

President: Major General John K. Herr, Chief of Cavalry.

Vice-President: Brigadier General Hamilton S. Hawkins, USA Ret'd.

Secretary-Treasurer: Lt. Colonel Fenton S. Jacobs, Cavalry.

Executive Council: Brigadier General Walter B. Pyron, 56th Cav. Brig.; Colonel William W. Gordon, 3rd Cavalry; Colonel Karl S. Bradford, Cavalry; Colonel Kenneth Buchanan, 106th Cavalry (H-Mecz); Lt. Colonel Eugene A. Regnier, (Cav.) G. S.; Lt. Colonel Homer E. Carrico, 311th Cavalry; Lt. Colonel Herbert H. Frost, 302nd Cavalry; Major Verne D. Mudge, (Cav.) G. S.; Captain Paul D. Harkins, 3rd Cavalry.

After this, the order of business enthusiastically turned to the affairs and interests of the Cavalry Association with remarks by the Chief of Cavalry.

The Executive Council appointed Lt. Colonel Fenton S. Jacobs, Cavalry, Editor of The CAVALRY JOURNAL for the calendar year, 1941, or until relieved during the ensuing year.

The meeting then adjourned and refreshments were served.

* * *

Cavalry Guidon

It has been suggested that, inasmuch as our distinguishing color is yellow, our cavalry guidon should be changed to one having a solid yellow field with blue letters and numerals.

It is claimed that our present guidon so closely resembles several of the other arms and services that at a distance it is easily confused. It further is claimed that a test disclosed that yellow can be seen more clearly in fog or night than red and white.

It would be interesting to know the consensus of cavalry opinion on this subject.

Cover Design

Numerous letters from our readers clearly indicate that sentiment is for continuing with the cover design of The CAVALRY JOURNAL substantially as it has appeared in recent issues. In other words, the Remington drawing suggests our historical background, while at his feet there is a symbolical parade of modern cavalry as we have it today. So be it!

In this regard, it is believed that the following letter is of interest:

Gentlemen:

Check for $3.00 herewith for The CAVALRY JOURNAL *for 1941.*

By all means NEVER change the cover or remove Fred Remington's famous painting of the U. S. Cavalryman, which is an inspiration to all horse lovers and brings back memories of pioneer days, Indian fights, Pony Express, stage coach—typical American plainsman rough and ready, when soldiering was real work and hardship.

I personally served with Troop "H," 14th U. S. Cavalry, Dept. of Mindanao, P. I. October, 1903-May, 1905, and Moro Campaigns, where the horse was supreme.

General Hawkins' accounts and comments are good; also articles on maneuvers.

Very truly yours,

Signed: JOSEPH J. ROHLK.

Cadence

In reviewing the articles written by the various newspapermen, who recently were given a personally conducted tour of our principal army posts, by the War Department, the following paragraph manifests an interesting reaction:

"It was the caliber of the raw human material, however, and the spirit of all concerned—officers, veteran noncoms and recruits—which impressed the observers most. For there were noticeable defects, not only shortages of modern weapons but evidence that the units were not fully trained. The soldiers, husky specimens as they were, were not all in step and lines sometimes straggled."

The units were not fully trained . . . The soldiers were not all in step.

Question: Is being in step the outward and visible sign, indicative of the degree of training?

There are two opposing schools of thought in this regard.

(1) "We allow only fifteen minutes a day for close order drill. . . . There is so much else for the men to learn in the modern army. We must have discipline, but discipline that means alertness of mind and muscles, not just parade-ground snap."

(2) "Marching in step is an important morale factor; it promotes timing and teamwork; it radiates a feeling of unity and strength—coördinated effort."

It is suggested that there is something far more fundamental than that which is expressed in either of the foregoing statements.

Those who have marched, dismounted, great distances under trying conditions, know that the rythmic flow of marching in cadence is restful to the fatigued mind and body. The visible concordant swaying of the shoulders and the cadent tread of the feet is harmonious: it is soothing to strained nerves. It gives a tired outfit a refreshing "lift," especially when accompanied by melody—be it song or martial music. It is comparable to horse-leading after a long period in the saddle; or a change of gait that has been excessively long. Many can remember on occasion how one "dumb-John" being *out of step* in a tired unit became so discordant and irritating that personal antipathy toward that particular individual was inherently general.

Marching in step, like dancing, serves a practical purpose. Those who are athletically or musically inclined instinctively feel cadence; others can acquire it by practice. Whether in rank or not, men, therefore, should form the habit of walking in step. This obviously is worthy of the consideration also of hiking clubs and semi-military organizations whose members include prospective trainees. It is a military training factor.

Cadence is a military differential.

General Gets a Horse to Keep Up With Tanks

By the Associated Press.

BROWNWOOD, Tex., Jan. 8.—So the general may keep up, the motorized 36th Division has ordered him a horse.

An official announcement said private mounts had been purchased for Major General Claude V. Birkhead, commanding officer, and his chief of staff, Colonel George Sears—so they could follow training activities "in difficult terrain."

Saluting

CHANGES IN AR 600-25

Pending the printing of changes in AR 600-25, November 11, 1933, paragraph 1*a* of those regulations is changed as follows:

1*a*. *When the national anthem is played.*—Whenever or wherever the national anthem is played or "To the Color" (Standard) sounded, at the first note thereof all dismounted officers and enlisted men present but not in formation will stand at "attention," facing the music, and render the prescribed salute (see par. 6), except that at "Escort of the Color" or at "Retreat" they will face toward the color or flag. The position of salute will be retained until the last note of the music is sounded. Those mounted on animals will halt and

render the salute mounted. Vehicles in motion will be brought to a halt. *Persons riding in passenger cars or on motorcycles will dismount and salute as directed above. Occupants of other types of military vehicles will remain seated in vehicle at "attention," the person in charge of the vehicle dismounting and rendering the hand salute (tank commanders salute from the vehicle).* Individuals leading animals or standing to horse will stand at "attention" but will not salute.

* * *

When will our Cavalry Bands produce an appropriate cavalry battle song?

* * *

Cavalry Chow

We, all of us, know that the axiom, "An army marches on its belly," is metaphorically as sound today as it was in Napoleon's time. And cavalrymen generally agree that any supply system for cavalry must be elastic, comparable to a rubber-band; it may be stretched to its limit of elasticity, and when it finally breaks—the cavalry *lives off the country*. Yes, literally lives off the country! There is ample historical proof of this. For a comparatively recent example, in Palestine on the 25th of September, 1918, after the Turkish Front was shattered, three British cavalry divisions were launched in pursuit toward Damascus. The start was made with only the rations and forage carried by trooper and mount; after that was exhausted the cavalry divisions resorting to local procurement and foraging managed to accomplish their missions without the normal flow of supply from rear to front. They lived off the country for a considerable period of time.

So much for the metaphors and the theoretical system, but what of our *battle chow* service before the breakdown of the supply system?

While all of this so-called streamlining is going on, why not *stream line our field ration?* This item is probably of more importance to horse cavalry in the field than to any other arm of the army. There has been little if any improvement in the kitchen equipment and food service in our horse cavalry troops since the Civil War.

Because of its extreme battlefield maneuverability, it is more usual than unusual, especially near our southern frontier, for horse cavalry at messing time during active field operations, to be in rough country far removed from arterial roads of supply. The units frequently are widely separated, in areas where there is little if any drinking water or fuel.

* * *

Remember? "Breakfast before daylight, sandwich for lunch—marching and maneuvering, dusty, tired, and hungry—getting dark, wind blowing clouds of sand. Bivouac! In *enemy* territory, no lights or smoke—animals first, water in a small brackish creek, groom, feed grain—find a spot in a dry creek-bed to flop—and oh! for a pan of good hot eats! The mess sergeant forages about and after what seems an interminable delay miraculously turns out some *slumgullion* (mixed with sand and a bug or two for flavor), bread crust and a cup of lye-tasting Java. Good, too! And, what about that platoon on outpost?" Remember? Oh, well, *the cavalry can take it.* To be sure! But that is not the point!

* * *

Since those Civil War days, great advancement has been made in canning food. It obviously would be an improvement in efficiency and more sanitary to provide horse cavalry, when in campaign, with five gallon drums, hermetically sealed, containing *prepared,* edible slum, stew, coffee, bread, etc. *ready to serve;* instead of all of those miscellaneous small cans and packages that are so hard to pack, prepare contents without suitable water and fuel, and serve. One could go on and on with this discussion and enumerate the infinite number of advantages such a system would provide. How simple it would be upon reaching bivouac in the desert to heat a container, using solidified alcohol or other smokeless heat-producing element, and let them "come and get it." How simple to send a drum or two containing a prepared meal and a can of "heat" to that platoon on outpost—or to supply prepared rations to isolated units by airplane or autogiro from a central plant.

Your Cavalry Journal is interested in publishing constructive discussions of this and similar subjects relative to improving cavalry supply during battle. *Spark up, cavalrymen!*

Deadline, next issue, March tenth.

* * *

Army Remount Service is Ahead of Schedule

The War Department announced that the Remount Service of the Quartermaster Corps of the Army, is well ahead of its schedule covering procurement, its 1941 breeding-system plans, and in the training of officers in all phases of remount work.

Twenty stallions, some of them sired by members of turfdom's "hall of fame" including some sired by Sun Beau and Man O'War, have been purchased this year and sent to Army remount stations for use in breeding.

On the procurement program, 19,000 animals already have been purchased and shipped to the three remount depots at Front Royal, Virginia; Fort Reno, Oklahoma; and Fort Robinson, Nebraska. Of this number, 7,500 have been processed and shipped to the Cavalry and Field Artillery. No further requirements are anticipated for at least three months.

High standards of flesh, health, and suitability of horses have not been relaxed, even though the program was rushed to meet the needs of the rapidly expanding Army. The general grade of the horses has been higher than in previous years. In the fiscal year of 1939, 32.2 per cent of the animals were graded "excellent." In 1940, 41.0 per cent were "excellent," while so far this year, 45.5 per cent have been in the "excellent" class.

In the time remaining before additional purchases must be made, many reserve officers will go through an intensive course to train them for duty with remount troops in the field or as replacements for Regular Army officers at depots.

The additional stallions purchased bring to more than 700 the number of horses being used in the breeding plan. They are loaned to breeders throughout the country, who must maintain and keep them in good condition. However, there is no obligation for the Remount Service to buy any of the animals produced, nor do the owners of the mares have to sell their colts to the service. Under the plan, about 12,000 foals are born each year, and approximately 75 per cent of the Army purchases are made from them. The plan has been in operation since 1921.

* * *

Editor's Mail

. . . *a spark plug*

Dear Ed:

I read the Chief's article in your November-December issue and I got a lift from it. I read again his Genghis Khan paragraph and found it good. I reflected on what I had been taught and on what I had read about the American idea of the proper employment of cavalry, and I found no conflict with the Chief's writing.

Then I turned to your editorial and found it good.

Then I rolled another smoke and projected the old imagination some months into the future: . . . Plenty of equipment on hand; basic training completed; the men are brown and hard, know their weapons and can ride; horses well conditioned and well trained; motorcycles, scout cars, and radios function; officers know their stuff, imbued with the cavalry spirit, their eyes on the horizon; morale is high. Ready for maneuvers.

Maneuvers? To what end?

Then I call up memories of the past and my heart sinks. For, though there were instances where the cavalry theory was appropriately exploited on the maneuver ground, too many times we fail to play the part for which designed.

Following are extracts from my recollections, each a maneuver experience, each at a different place.

I see cavalry tied to the roads, cooped in by fences, "off limit" land on all sides—cavalry *pretending* to maneuver, *pretending* to scatter at aerial attacks, *pretending* to seek cover, *pretending* to deploy in frontage and in depth. Value: Horse exercise and march discipline for the ranks; a sort of tactical ride for some leaders and staffs.

* * *

Cavalry tied closely to the flanks of infantry. Ignorance of the enemy setup and an apparent unwillingness to let the cavalry go places and find out things.

* * *

Blue force consists of two regiments of infantry and one regiment of cavalry. Enemy situation is nebulous, but it appears to be about time for a fight. So the Blues start their development. Was the cavalry in front, on flanks, in reserve, raiding, or enveloping? No. *All three regiments* were lined up abreast in preparation for an attack.

* * *

Two regiments of cavalry and a reconnaissance (scout car) squadron hand placed along a river line (bridges and fords available). Not allowed to advance or reconnoiter. Infantry brought alongside and sandwiched in the same line. Artillery brought up close behind. *Enemy allowed to reach opposite bank of same stream, and not until then was the cavalry unleased.* For what?—Well, I don't know the answer to that one. But it was a pitiable sight to see embarrassed cavalry moving along beside, behind, and intermixed and generally jumbled up with the doughs (and sometimes with the artillery). It might not have seemed so strange in a disorderly retreat—but this was an *advance!*

* * *

A small degree of these misadventures may have resulted from some commanders' lack of certainty as to the appropriate employment of cavalry; but it is my opinion that, in maneuvers involving combined arms, restrictions contained in the design of the maneuvers constitute the principle cause for the faulty employment of cavalry. I know, of course, that available terrain and available time are factors which the authors of maneuvers have to consider. They probably also give most consideration to the majority of troops to be served, which ordinarily does not include the cavalry. But I suspect that, notwithstanding these matters, if the authors would employ a little more imagination the commanders could more logically employ their cavalry. . . . Basically I would recommend against weakening one side in infantry and padding it up with cavalry, and then giving the side a mission which causes the commander to yearn for more doughboys. When a commander begins to yearn for doughboys, and cavalrymen are conveniently at hand—well, what's your guess? . . . Another thought (admittedly a bit cruel): Don't make a free gift to opposing commanders of so much information about each other. Let them earn it at the expense of a little horse sweat. . . . Also, if there is a sizable piece of ground on which to set the stage, don't clutter it *all* up with preconceived dispositions—leave a little elbow room for maneuvers . . . etc., etc.

Do I step out of bounds, Ed? Do I appear to be more critical than is my right? Such is not my intention.

I love and believe in the cavalry, both the hay and gas varieties. I have spent many years being taught and teaching. I think I have absorbed the doctrine and I believe in it. Ed, what I especially want to know is—when are we going to have an opportunity to practice what we preach?

So long, Ed, and a happy New Year.

C. B. Cox,
Lt. Col., Cav.

Notes From the Chief of Cavalry

Expansion of Cavalry School

In order to meet Cavalry expansion in the 1941 Military program, new courses have been introduced into the Cavalry School, and personnel, both student and instructional, have been radically increased.

During the past several years, the average student attendance at the Cavalry School has been roughly 85 officers and 150 enlisted men each year. Under current plans, there will occur a 10-fold increase in officers with 185 officers going through some course at the school every three months. For enlisted personnel, there has been an 8-fold increase; 400 men are now pursuing the several courses in every quarter. Instructional personnel is being expanded to meet these needs, and for the greater part, reserve officers are being incorporated into the faculty.

With the varied types of units to be found now in the cavalry, there is a greater need than ever for enlisted specialists. In order to meet this need, the Chief of Cavalry has introduced a motors course and communications course for enlisted personnel. These courses, aimed particularly at the mechanized elements of the cavalry, will assist considerably in furnishing men in that important sphere. But, at the same time, the necessary expansion has been made in the Horseshoers and Saddlers courses. The latter courses are considered of especial importance particularly with respect to corps reconnaissance regiments now being inducted into active service.

The following chart affords a summarized picture of the number of students in attendance at courses now being conducted at the Cavalry School:

NUMBER OF STUDENTS IN ATTENDANCE AT COURSES
THE CAVALRY SCHOOL, FORT RILEY, KANSAS

Basic Horse & Mechanized Course
December 16-March 8:

Regular Army Officers	23
Reserve Officers	21
National Guard Officers	71
	115

Motors Course
December 16-March 8:

Regular Army Officers	1
Reserve Officers	17
National Guard Officers	2
	20

Communications Course
December 16-March 8:

Regular Army Officers	3
Reserve Officers	14
National Guard Officers	2
	19

Noncommissioned Officers' Course
December 16-March 8:

Regular Army N.C.O's	63
National Guard N.C.O's	12
	75

Horseshoers' and Saddlers' Course
January 6-March 15:

Numbers and personnel furnished at the discretion of the Commandant for the units at the post of Fort Riley, Kansas.

Cavalry Replacement Center

The Cavalry Replacement Center is fast transpiring from a planning stage to one of reality. Two thousand workmen are busy on Republican Flats at Fort Riley, and late reports indicate rapid and satisfactory progress in the construction of buildings of all types; messes, barracks, stables, garages, etc.

Lieutenant Colonel Wayland B. Augur, executive officer, and Major Alexander George, plans and training officer, have been on the ground at Fort Riley for the past month and are rapidly pushing to completion all preliminary plans; training schedules, requisition for supplies, organization of personnel, and all other pertinent questions are being whipped into shape.

In the Replacement Center, there will be a total of 169 officers; 10 regular and 159 reserve. Practically the entire quota of regular officers has arrived, and they are working on details pertinent to the jobs on which they have been assigned. All reserve officers reported for duty on January 20. Under the coöperative supervision of Colonel Harry D. Chamberlin and Lieutenant Colonel John T. Cole, both 2nd Cavalry, the advance detachment of reserve officers were put through an intensive course of equitation.

According to latest War Department announcements, the first quota of selective trainees for the Cavalry Replacement Center will total approximately 5,300. As there is only one Cavalry Replacement Center, Cavalry trainees will come from every Corps Area in the country. Upon arrival, they will be assigned to one of the 28 training troops specified and will either receive basic training for horse units or mechanized units of the Cavalry. An enlisted cadre of over 900 men has been designated and will be present by February 15 for advanced preparations to receive trainees. The first group of trainees is expected at Fort Riley on or about March 15, 1941.

General Hawkins' Notes

Observations of a British Staff Officer

WE are so prone to jump to conclusions. The events of a single campaign as reported, rightly or wrongly, by various observers, military or civilian, astute or stupid, are taken as conclusive evidence that all the old forms and principles are wrong and that everything new is right and permanent. We wish to rush to new forms because they were successful, apparently, in some special case. The observations of civilian critics have too much influence on military minds. They are sometimes right, but they should be accepted with caution and only after weighing carefully all the factors which have brought success or failure in any campaign. Military critics, also, are liable to error, although they have more fundamental knowledge on which to base their conclusions. We should listen to all such criticism and try to separate the chaff from the wheat; but we should restrain our own inclinations to rush to conclusions.

There is, nevertheless, very much in the military profession with which to find fault. I believe that in the American army we are very conscious of our faults and very ready to listen to criticism, especially civilian criticism.

The recent campaign in France has illustrated many virtues in the German army and many faults in the French army. We in the American army recognize many faults in the French army that we ourselves possess; but we should not overrate the new things developed in the German army. Their chief virtue was in their understanding of the faults and weaknesses in the equipment, organization and training of their opponents, and their ability to take advantage of the special situation that thus confronted them. The Germans are apparently wise enough not to believe that the tactical methods and arms that brought them such success in Poland and France will be successful again without modification or complete change to meet the next military situation with which they may have to deal.

The principal fault with the Poles and the French, and to some degree the British, was in lack of imagination and failure to realize what the new equipment in the German army meant and how it was going to be used. Insufficient and wrong training for open warfare, and inadequate weapons to combat the new German equipment, was the result of this failure.

Discussion of Diary

In the *Saturday Evening Post* of December 7th and December 14th, 1940, there were published some extracts from the diary of a British staff officer written in France during the recent campaign. Diaries, written on the spot and at the very time of the various occurrences, are the most valuable of military records. This officer seems to have been particularly astute in his inferences and conclusions. No doubt, many officers have read this diary. Some of the entries, however, are so important to us now in building our new army that they deserve to be extracted and emphasized for study. They are here quoted in part and followed by pertinent remarks.

(1)* *"May 10, 1940—The contrast between the real thing and the opening phase of an exercise is very forcible. In theory, the messages flow in thick and fast. Intelligence summary trumps intelligence summary. There is not a second to spare. And now the fact, the real thing in practice. There is no news of our own troops or aircraft. No messages, no intelligence summaries, no telephone."*

This confirms our own experience and shows how impractical and misleading our command post exercises are.

(2) *"May 13, 1940—The only dark feature is a threat to the French Seventh Army's left by a German mechanized column. This column is reported to be twelve miles long, closely spaced, and is now passing through Breda. The Bomber Command sees in this a useful target and is about to deal with it."*

The Bomber Command, however, did not deal with it. Nor did they even delay it. Only an extremely large bomber force could have stopped it, and the bombers were off somewhere else on their own. This not only shows the necessity for having air forces subject to command by commanding generals of ground forces, but, also, the indispensability of large cavalry forces equipped with squadrons of antitank guns. It would have been too risky to have sent motorized infantry on this mission. They would have been outflanked and their parked motor trucks probably captured.

Writing about the German break-through near Sedan:

(3) *"May 14—Not so very long ago I went right through the fortifications on this front and estimated that a well-organized and determined resistance would cost the Germans half a million casualties if they were to break through. And what has happened? The Germans have walked through five miles of fortifications in depth with a loss of probably 500 men. It appears*

*Quotations numbered for convenience in summarizing.

that, as the Sedan sector was considered so strong, the most inferior of the French divisions were posted there to hold it. They were mostly Parisians and their morale was of the lowest order. When the dive bombers came down on them, they stood the noise (there were hardly any casualties) for only two hours, and then they bolted with their hands over their ears."

This shows that only well trained and well disciplined troops can be trusted in modern war. Our one year enlistment is too short. By the time a recruit is only fairly well trained and disciplined he goes out and we get no service from him. We have trained him for nothing unless he reënlists. He renders no service. He is merely trained to render service.

(4) *"May 16—While the German army is pouring through France, the bombers direct their effort on Essen. The bombing of Essen will not stop the German onrush in France. The maximum effort of the Bomber Command should be directed to concentrating on the major crossings of the Meuse and on breaking up the recklessly unorthodox formations, the close-packed columns pouring down every main road leading from east to west."*

This shows again the lack of wisdom in having a separate air force not under control of the army commander.

(5) *"May 17—The fog of war grows thicker, but nonetheless there emerges the gloomy bulk of the fact that many units of the French armies are not really fighting. The German armored divisions are too much for them. It is Poland over again."*

This loss of morale was due to lack of adequate numbers of antitank guns organized in separate battalions, and lack of training for open warfare.

(6) *"May 18—News of the sort we had expected from the first came in today in a series of messages from various sources. The French have turned on the Germans. General Giraud, for example, states, in a message just received, 'Am attacked by fifty light and fifty heavy German tanks. Am destroying them progressively.' Now, this is the language of the old days. It is characteristic of the type of officer on whom we had relied to hold up the German advance."*

This shows that with proper ideas of open warfare and reliance on guns properly used and courageously manned, the German tanks could be stopped even though the French did not have adequate numbers of antitank guns of large enough caliber. The idea that has spread over the world that mechanized forces are invincible is absurd. Proper guns properly organized is the answer to tanks. The Germans know this.

(7) *"The French tanks have been fought magnificently. The mechanized cavalry have certainly shown great dash and daring, but the heavier-armored German tanks have been too much for them, and they have been shot to pieces."*

This shows that mechanized troops cannot stop or even delay the enemy stronger mechanized forces. Only cavalry equipped with antitank guns can delay enemy mechanization long enough to enable our infantry, itself equipped with antitank guns, to establish itself in position to resist an enemy mechanized attack. Our artillery can certainly assist in repulsing enemy mechanized attacks. Our own mechanization is not very effective to stop enemy mechanization unless we have a great superiority in numbers of tanks. Without this superiority, the most effective use of our own mechanization is for the counterattack after the antitank guns of our infantry, or cavalry, have crippled the enemy tanks.

Our British officer goes on with:

(8) *"Personally, I am amazed that more heroic measures have not been taken. A few .75's shoved into every road in the path of the Panzers and to the flanks, firing point-blank, would blow them to kingdom come."*

This would have required the initiative developed only by training for open warfare. It was not possessed by an army trained only for defensive warfare in accordance with the advice of certain French soldiers and certain pseudo-experts in England.

(9) *"May 19—The Germans have taken every risk—criminally foolish risks—and they have gotten away with it. They have laid themselves open to destruction from the air in close columns; they have laid themselves open to attack from exposed flanks; they have made themselves vulnerable by allowing their mechanized units to outstrip, by far too great a distance, their main body; they have done everything that should not be done by orthodox book-trained, stereotyped soldiers, and they have made no mistake. The French General Staff has been paralyzed by this unorthodox war of movement."*

The fact is that there was nothing unorthodox, except to the French and those who followed the French doctrine, about the German war of movement. Audacity is orthodox, especially when your opponent is inert. The French army, with no cavalry except mechanized cavalry, with no antitank guns worthy of the name, and imbued only with the spirit of the defensive, was an open victim to just such audacious and vigorous attacks. The Germans knew this full well. It is a credit to their intelligence that they took advantage of these conditions. The Poles had cavalry, but it was improperly armed, and they had no antitank guns to speak of in their infantry. The French might have observed these defects, but they contented themselves with the idea that overwhelming numbers of the German army was the only reason for the Polish defeat. The French were touted as the finest army in Europe, and they were very complacent about it. They had their political troubles, but there was no excuse for their military blindness. There will be no excuse for us if we continue to imitate the German method and organization which was designed for a special situation in France and would undoubtedly be changed for new situations. The Germans did not use cavalry extensively, but they did not need to do so in the absence of French and British

cavalry and the lack of opposition to the Panzer Divisions. To the contrary, we in the Western Hemisphere will always need large forces of cavalry in addition to mechanized forces and motorized infantry and much "marching" infantry.

The British officer again comments on the wrong idea of their air forces—the same idea that prevailed at that time in our air force. His diary continues:

(10) *"May 20—This is a soldier's point of view and this is a soldier's battle, but our airmen do not, perhaps, see this phase through soldiers' eyes. To us they seem to be wasting their efforts and will be likely to lose the bases through which they operate, as a result of this inability to spare air craft for close-in coöperation with the army in this, its very desperate hour of need."*

This is just further evidence that all air forces, except the German, failed to see that their most important mission was the support of the army as long as an army was operating in the field.

(11) *"May 21—France lacks imagination. There has been no effort to mine and bomb with grenades the Panzer columns on their line of march. There have been no improvised bottle bombs wrapped in blankets that burst into flames and wrap themselves round the tank tracks. There have been no enterprise and no show of initiative by junior officers and men. They have become Maginot minded; a false sense of security has robbed them of initiative."*

Thus the Panzer divisions had little or no opposition. Nothing to test them against real resistance.

(12) *"May 22—Still no French counterattack to pierce the bulge. Precious opportunities have been thrown away. General Georges was asked point blank why the promised counterattack had not been delivered. His liaison officer spoke for him and answered that the General could not give orders so far in advance of the inclinations of the divisions. This was an eye-opener, and it is only now that it is brought home to me that the formation of soldiers' committees, regularized in the French army in 1936 by Blum's regime, have so far undermined discipline."*

Here is indeed an eye-opener to those in our country who encourage socialism.

(13) *"Our own one and only armored division was landed in France yesterday, and is to set off from Rouen to try to deal with the German tanks. They will be very unfairly matched, alas."*

Another example of the improper use of armored units when the army is on the defensive.

(14) *"The German efficiency is well illustrated by the following wireless interception—this message was sent in the clear by the Germans. It says, 'All bombers to Cambrai.' Again at 14:00 hours (2:00 P.M.) today, 'All fighters to Arras,' and at 14:10 hours we intercepted the reply; it read, 'All fighters on the way.'"*

"This record is a reflection on Allied procedure. How do we send out our messages? How do we send out our executive orders by wireless? As far as I know, it has never been in the clear. The Allies send out orders calling for immediate action, but they send them in code, and this means that by the time the message is coded by the sender and decoded by the recipient some hours will have elapsed and the fleeting-opportunity target will no longer present itself for attack. It will be too late."

Certainly, our officers with experience will sympathize with this statement.

(15) *"May 23—General Georges has just explained that three French light motorized divisions are moving north from the line of the Seine at Paris to the sea, with the intention of taking up positions on the south bank of the Somme to stop up the southern side of the bottleneck. The Belgians are detaching one or two divisions to move in on the pocket from the north and northeast. In this way it is hoped to pen in the Panzer divisions. The whole of the Allied bombers are to go in during the day and try to smash the Panzers. Our own armored division is moving onto the Somme and will go into the pocket after the aerial bombardments and clear up the mess. This is the plan, but the duty allocated to our armored division appears to me a hopeless task."*

Here again we see the idea of trapping the Panzer divisions by infantry divisions without antitank guns in any numbers and by attacking the German tanks with a single armored division which is sure to be wasted. Airplane bombing against the mechanized Panzer divisions after the latter were deployed and no longer massed on the roads could do little good. A large cavalry force with their antitank guns, and backed up by the armored British division, moving in between the Panzer divisions and the German main bodies which were well in rear, could have done something to delay the German movement, interrupt communications and give more time for other French divisions to be brought up for the attack against the German motorized and marching infantry divisions. No mechanized or other troops could do this so well; but to attack the Panzer divisions by using infantry without antitank guns was a hopeless task. There was no coöperation however, and the attempt was called off. Thus the hope of converting the situation from a defeat into a major victory for the Allies went glimmering, and with it all hope for France.

The remaining entries in the diary are very interesting but contain no tactical conclusions which might be used for the purposes of this article.

Summary

To summarize the implications of these notations:

(1) The unreality of Command Post Exercises.

(2) Necessity for cavalry to guard flanks in addition to airplanes, mechanized or motorized forces.

(3) Only well trained and disciplined troops are trust-worthy.

(4) Necessity for air force being subject to orders by commander of ground forces.

(5) Loss of morale due to lack of antitank guns and lack of training for open warfare.

(6) Good troops can improvise some defense against tanks even without adequate numbers of antitank guns.

(7) Mechanized troops cannot fight delaying actions against superior mechanized forces without total sacrifice. Only cavalry equipped with antitank squadrons can do that.

(8) Initiative is developed only by training for open warfare.

(9) The apparent reckless audacity of the Germans was justified by the situation. Nothing unorthodox about that.

(10) The real mission of air force with an army in the field is tactical coöperation.

(11) No imagination in French army. Panzer divisions had no real test.

(12) Dangers to the army of any country given to socialism.

(13) Another example of improper use of mechanized troops.

(14) Only simple and brief orders are necessary to issue to commanders who know their business. Rigid regulations against sending radio messages in the clear are foolish.

(15) Futility of attempts to attack mechanized troops without proper weapons, and necessity for cavalry in effort to cut off enemy detachments that are too far advanced without support.

* * *

Finally, all reports from the campaign in France emphasize the necessity for one supreme commander, for discipline and obedience to orders under all circumstances, and for initiative on the part of subordinate commanders of units large and small.

Initiative does not mean disobedience of orders. On the contrary it means carrying out of orders in the face of unforeseen difficulties. Faith in one's commander means not only faith in his wisdom but also the belief that, if one does his best in carrying out the spirit of his orders, any failures will be understood and excused.

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"We have accustomed ourselves to looking upon our armaments as a heavy burden, borne unwillingly, forgetting thereby that the army is the well from which our people constantly draw afresh strength, self-sacrificing spirit, and patriotism. In the hour of danger we shall have to pay in blood for what we have neglected in peace, from want of willingness to make some sacrifice.

"But we have to reckon with all these circumstances as given factors. The enmities surrounding us cannot be exercised by diplomacy. Armaments, under modern conditions, cannot be improvised at will the moment they are wanted. It seems impossible to get ahead of our rivals in matters technical. So much more, therefore, must we take care of maintaining spiritual superiority in case of war, and of making good, by will-power on the one hand, and by the skill of our operations on the other, the superiority in matériel and personnel possessed by our likely adversaries.

"The more we study the nature of the art of war, and the more fully the army is alive to what is essential in war in general, and in the conduct of modern war in particular, the more uniformly and to the point will every portion of our army coöperate in war, and the greater will be the mental and moral superiority we shall gain over our enemies."

—*On War of Today*, VON BERNHARDI.

Post Headquarters and Academic Building

RILEY IS BOOMING

By Major Albert Whipple Morse, Jr., Cavalry

INTENSE construction activity is in progress at Fort Riley. More than 8,500 men are employed by civilian contractors on six major projects, Camp Funston, the Replacement Center on Republican Flats, a hospital site at Camp Whitside, a warehouse area on Pawnee Flats, expansion of facilities on Marshall Field, and a student center for The Cavalry School at the west end of Engineer Bridge, with an ultimate capacity of 630 men.

Brigadier General Robert C. Rodgers, Commanding General of the Post of Fort Riley and Commandant of The Cavalry School, is placing all schooling and training activity on an intensified basis. Expansion of training facilities is being conducted to meet the requirements of future contingencies.

With historical significance known to all cavalry officers who have served at Fort Riley during the past two decades, Funston again meets an emergency. To quarter the 2d Cavalry Division, today there are in the flesh 120 barracks, 40 mess halls, 40 stables, and such other auxiliary buildings as recreation buildings, infirmaries, blacksmith shops, post exchanges and a theatre.

On the Republican Flats, just north of the Washington Street Bridge in Junction City, is the new Cavalry Replacement Center, where selective service men will receive their training preliminary to assignment to active units throughout the Army.

Marshall Field, occupied by the 1st Observation Squadron, Air Corps, is rapidly expanding to take care of its increased personnel. Nine new barracks are now under construction which will provide for the immediate needs of this organization.

Site of summer Reserve Officer and National Guard

Top—Cavalry Replacement Center on Republican Flats. Bottom—Hospital Area at Camp Whitside.

Portion of Camp Funston

encampments for many years, Whitside is the location of a 500-bed hospital being constructed to augment the facilities of the Fort Riley Station Hospital.

This construction is being rushed to completion by the employment of the "swing-shift" system, arranged in such a way that some part of the work is being done 24 hours a day and seven days a week. Night work consists of operating heavy machinery for grading purposes and various other jobs that can be accomplished as efficiently by dark as by daylight. A sufficient number of employees are on the payrolls to insure that none of them work more than the number of hours per week permitted by law.

* * *

Four thousand eighty horses are scheduled to arrive at Fort Riley in the period February 1st to April 15th.

* * *

When the Cavalry Replacement Center opens next month for operation, there will come into being an activity of considerable magnitude within the arm. The peak load which this Replacement Center will carry amounts to 7,000 which includes also the overhead training personnel required. Actually, there will be 6,085 trainees to go through the intensive training envisaged for this period of their year's duty with the Army.

Complete detailed preparations will have been completed prior to receipt of trainees. Advance training is being given to the overhead cadres which in turn will be taken in proportionate numbers from all regular units. The bulk of administrative and training duties will fall upon the shoulders of Reserve Officers who will be especially selected for this duty. From tentative figures, it appears that approximately 158 Reserve Officers will eventually be involved in this work.

* * *

Marshall Field, dedicated to Colonel Francis C. Marshall, Cavalry, is now the home station of a Base Detachment of the First Observation Squadron, formed on January 7th in a reorganization of the old squadron into a Base Detachment, commanded by Captain Gerry L. Mason, Air Corps, and the newly constituted First Observation Squadron, which is Headquarters and Headquarters Squadron of the 47th Group. Captain C. Thomas Mower commands the Air Corps Station at Marshall Field, and commands the First Observation Squadron.

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New Moving Target Range at the Cavalry School

By Major C. D. Silverthorne, Cavalry

THE CAVALRY SCHOOL has used a gravity range for moving target firing for a number of years. This range is a narrow gauge railway track in the Morris Hill area, the center of the reservation.

It was satisfactory during the period of small classes and a relatively small garrison. However, the advent of the 37-mm. antitank gun, the increased size of the classes, the large increase in the garrison, and the need of all available space for maneuver area and combat ranges have made necessary the construction of a new moving target range. The old range will be left intact for occasional use.

Old Range

The gravity range is slow in its operation. The cars are released from a ramp at the upper end. Speed depends upon wind, condition of the wheels and bearings of the particular car, and on the temperature. On very cold mornings the thinnest grease on the wheels is so stiff that they will hardly move. Under good conditions, a speed of 30 miles per hour is obtained.

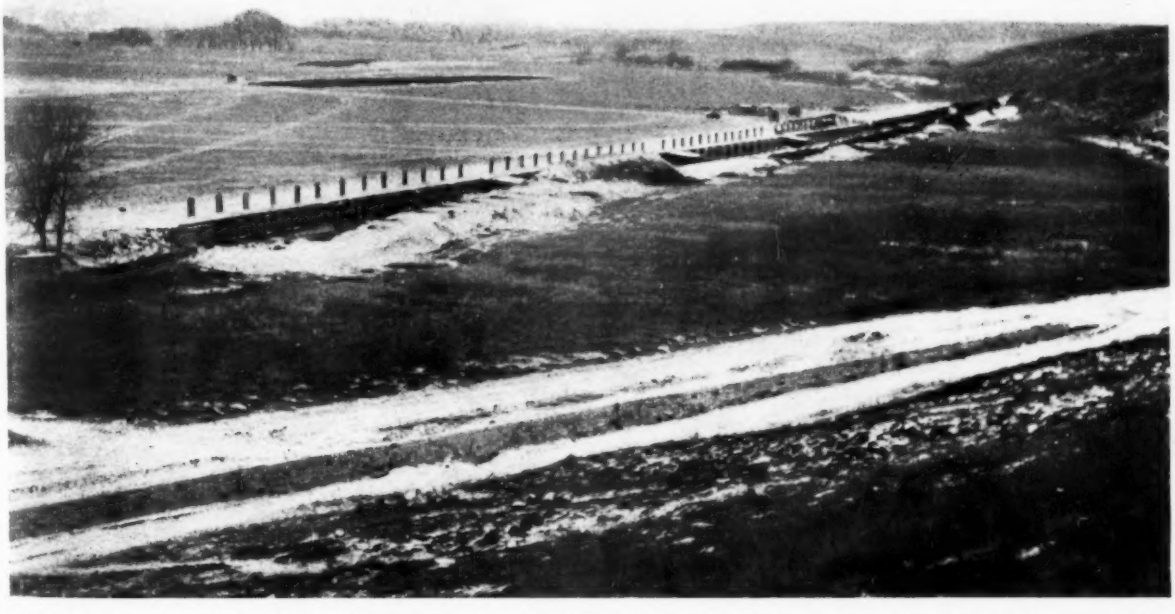
The track has to be protected by a rock wall. Very often shots striking this wall cause rocks to land on the track and throw the cars off. The 37-mm. antitank gun was fired against only three targets. It was too hard on the wall, and threw all its three cars off the track. Continued firing with this gun would ruin this particular range.

Target details are in dugouts. After the run, they must come out, mark the target, and switch the car to a sidetrack. When a car jumps the track, there may be a ten minute delay in getting it back.

The ramp holds only fourteen cars. Under good conditions, a run is made in five minutes. Allowing for normal delays, the fourteen cars are run in about one hour and thirty minutes. As it requires at least forty-five minutes to haul them back up to the ramp by truck, and push them into place by hand, it is difficult to get a double run in less than four hours. It is decidedly not a "production" range.

New Range

The new moving target range is located just east of the known distance target range, and will not interfere



View from the rear of the National Range. In foreground is the beginning of the stone wall to protect the new moving target track. On the far end of the target butts is the extension to increase the capacity of this range from 50 to 150 targets.

with the operation of that range. Due to the excellent backstop, a danger area of only two thousand yards beyond the target will be required. It is one of the few places on the reservation where it is really safe to fire the powerful antitank gun.

The range is designed for speed work, being motor driven over a straight track nearly 400 yards long. Taking out the space required for shelter, and for stopping the car, it will have a good clear run of a little over 300 yards. At a speed of 20 miles per hour, the firing time will be about 30 seconds, a very convenient time for caliber .30 and caliber .50 firing.

The target will be removed from the car at the end of the run, and a fresh one put on. The old target can be scored and pasted during the next run. Under good conditions, at least twenty runs per hour will be possible. Using two targets at a time, this will give a capacity of 40 targets per hour fired in two directions.

The track runs diagonally to the line of fire. Although the majority of firing will be done at ranges of 400 to 600 yards, firing points up to 1,100 yards are available for special work.

This range is patterned after the very successful range at Fort Knox. Although originally designed for a continuous steel cable driven by a gasoline motor, as in the Knox range, negotiations are now under way for an electrically driven car, which would greatly reduce lost time due to normal gasoline engine failures.

It is expected that the greater part of the firing will be done by Caliber .30 and Caliber .50 guns. However, the range is also designed for the antitank gun. Taking advantage of the experience with this gun on the old range, the protecting wall of the track is heavily rocked, and the rock is protected by a twelve-foot parapet of earth to avoid the shattering effect of the high power gun.

It is expected that this range will be completed in the spring of 1941.

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Former students of The Cavalry School will note two important changes from the days when they were here. First, firing goes on in all kinds of weather. Second, the advent of the M-1 Rifle returns students to the known distance range for a thorough study of this important weapon.

THE THOUSAND INCH RANGE AT THE CAVALRY SCHOOL

By Lieutenant Colonel Vennard Wilson, Cavalry

THE utilization of 1,000 inch firing facilities becomes of paramount importance in these days of mass training of troops. Reservations which were entirely adequate for their garrisons last year are now crowded. Maneuver ground and firing areas are at a premium.

The 1,000 inch range has the advantage of giving a great amount of training value on a comparatively small area of ground. This article deals with the more important features of its construction and operation, and a discussion of its value and place in our scheme of gunnery training.

At The Cavalry School last year we could easily take care of the entire garrison on the twenty-four firing point range shown in the accompanying photograph. Next year, with the Academic Division, the 2d Cavalry Division, and the Cavalry Replacement Center, we shall require some 150 firing points. Those of you who know the Fort Riley Reservation and the small ranges under the steep bank north of the Pump House Road may expect to see quite a change on your return. That entire area from the Hippodrome to Republican Point, will be almost a continuous line of firing points. It will include both stationary and moving targets at 1,000 inches, and a group of firing points for dismounted pistol work.

The Construction of a 1,000 Inch Range

The 1,000″ range has the merit of being easily constructed and requires but little area, provided a suitable back-stop is available. In choosing a site for a caliber .50 range, be wary of a close back-stop unless it is given a good tryout. In hard ground, caliber .50 bullets have a tendency to bounce backward and drop disconcertingly near the firing point. It is safer to try out a number of places and observe for any return of the bullets. In certain types of ground, a distance from firing point to back-stop of as much as two hundred yards may be required.

Academic division range (24 tracks)

The Academic Division 1,000″ Range represents almost an ideal installation, but is more elaborate than would be required for troop training. It was installed primarily for Academic Division purposes, with the addition of tracks and rolling carriages for use by the troops, as will be explained later.

The school requires a highly efficient range for the reason that schedules are prepared well in advance and its firing time is very limited. Timing is by the hour, not by the halfday. Its firing point must be usable in all types of weather and must have a control tower from which the instructor can observe the entire firing line. Targets must be quickly changeable. Twenty firing points are normally used, with a few extra guns for "alibi" runs. Although the school fires qualification courses, they are primarily for instructional rather than record purposes.

The firing point was therefore built up of stone, filled in with dirt, and a light coating of fine rock applied. The back-stop is part of the butts of an old rifle range of the 1917 days.

A quick-change target is required. We normally use three target frames per firing point, and each frame will be used at least four times per three hour period. The old method of pasting targets to a frame has long since passed. Some form of clamp to hold the paper to the target is essential for speed work. Our frames are carefully made and fitted with a clamping stick along each edge. The paper target is put in place, the four sticks are placed on each edge, and the turning of wing nuts locks these in place. Another very satisfactory form is to make a hinged lid, open in the center. Closing the lid over the paper target and clamping the two lower corners will hold the paper in place.

The target house is a convenient storage place for the targets and frames, and a work place for preparing them.

Academic Division vs. Troop Training on the 1,000″ Range

The objective of the Academic Division is to get the maximum training value from a limited time. The objective of a troop commander is to get the maximum training value from his ammunition allowance and to

qualify the greatest number of so-called "experts." He can usually allot at least four full morning periods to the training of a small group, and has time for plenty of "dry-runs" and "shooting the corners," which are the essence of high qualifications. He rarely uses more than four guns at a time and, by selection of best men, can have a well qualified coach at each gun. The troopers get a great deal of high grade individual supervision.

The Academic Division fires twenty guns simultaneously, with groups of sixty students. It does not have as many as twenty high grade coaches. For its objective, there is an advantage in the "coach and pupil" method. With the HMG, the firing must be completed in two periods, and only one period is allotted to the LMG. However, its students have had some previous firing experience and their training is cumulative from one weapon to the other.

In the case of the HMG, the first period is only two hours (school hours), actually about one and a quarter hours firing time. This is devoted principally to instruction in setting the tripod, adjusting the gun to group properly, setting the adjusting plate of the sight to the zero of the barrel, and the effect of proper and improper holding. Only a small amount of manipulation firing is done in this period. This important phase (initial adjustment of the gun for firing) is often done only by the first group in troop training, as their guns are left in position as much as possible.

The second instructional period is of three hours, about two hours and fifteen minutes being firing time. The guns are partially adjusted prior to the arrival of the class, and firing is taken up where it left off in the previous period.

The first order fires by command from the control tower. The loudspeaker is a great asset in this control and permits any necessary instructions to be given individual guns. The control officer can see when the whole line is ready, and when it is clear.

The first target is fired without time limit. While the first order is on the gun, the second order is acting as coach and the third order is ready with a fresh target and ammunition for the next firing. Upon completion, and upon order from the control tower, No. 1 rushes out to remove his target frame, No. 3 brings out the fresh target, and No. 2 gets ready to fire. The change is made very rapidly.

The second target is fired against time as a "preliminary record." The third target is for "record." Targets are scored in rear of the firing point. The fourth target is fired only by those who had trouble with the guns or who did not fire satisfactorily.

These two systems are described because they represent two extremes in training methods. With the greater number of men in our expanded army and the consequent load upon our facilities, our former leisurely type of unit training must give way to mass production methods. The Academic Division system described herein is mass production of a type, although obviously not the best for recruits. It has the merit that its objective is to teach men to handle an automatic weapon rather than to concentrate on making high scores. Some intermediate between these two methods will be required.

Use of Tracks on a 1,000″ Range

When the entire line fires simultaneously, it is quicker to carry the targets out than to bring the carriages in. The tracks have their greatest value when a number of small units, firing independently and using three to six targets each, are on the range. The tracks then permit changing individual targets without holding up the entire line.

Facilities for a 1,000″ Range

The minimum facilities for a range are a fairly level firing point and some stakes driven in the ground at a distance of 83 feet 4 inches (1,000 inches) to hold the target frames. A lateral distance of 5 yards per gun is desirable, although 4 yards per gun will suffice. Guns placed closer than this will not permit adequate supervision.

The principal advantage of a built-up firing point is adequate drainage. Its height is governed by the relative elevation of the target frames. The gun should be approximately level when pointed at the center of the target frame.

If tracks are to be used, it should be perfectly satisfactory to use one track per 2 guns, rigging the carriage to hold two target frames.

A back-stop is not essential. Its primary purpose is to limit the danger area and make terrain available for other purposes.

A direction of fire to the north is preferable for all-day work on the range, giving best average target illumination throughout the day. The old machine gunners used to prefer to fire east, working in the mornings only. This illuminated the shot holes and made it easier to adjust on the strike. Present courses emphasize laying by sight, and illumination of the front face of the target is of greater importance.

Value of 1,000 Inch Firing

Thousand inch firing has long been the realm of the machine gunner. Until about 1930, he fired a quali-

Range house

fication course involving a score at 1,000 inches and a score against field targets. Later he dropped the field targets.

The light machine gunner, who came into prominence about 1932, started with a qualification course using both the 1,000 inch and the field targets. Having a little difficulty in making good scores on his field targets, he followed the lead of the heavy machine gunner and dropped them. Commencing in the fall of 1940, his qualification course consists of two scores on the 1,000 inch range. Both light and heavy machine gunners use field firing for "instructional purposes," but not for "record."

The rifleman has always preferred the known distance range. Many years ago, he included a form of field firing known as the "skirmish run" in his qualification course, but soon abandoned it. About 1938 he became interested in 1,000 inch firing, and introduced a few rounds for instructional purposes. This was retained with the advent of the M-1 Rifle, and a still further step was the introduction of a complete qualification course to be fired at 1,000 inches in cases where other range facilities were not available. A recent change eliminates the 1,000 inch work for the rifleman.

The caliber .50 machine gunner has developed a combined qualification course, using a 1,000 inch target, some known distance firing, and field firing against both stationary and moving targets. This course has not yet been fired for "qualification." It is the most comprehensive of all, and it will be interesting to follow in its future development.

Here we have the picture of the "field target" coming into and disappearing from all qualification courses (except for the New Caliber .50, as yet not fully tried). The machine gunner is staying with his 1,000 inch work and the rifleman with his known distance firing. What is the answer?

The answer is that a good field target is not a good precision target, and cannot easily be rated for "qualification" purposes. Furthermore, the ammunition expended in field firing will pay greater dividends in training value when used for group rather than for individual training. This is especially true for the machine gunner, where the squad must act as a team for the gun. The justification for the combined course of the Caliber .50 Machine Gunner is that his is a precision weapon, not an area weapon, and his course fits his special type of work.

Thousand inch firing has come into disrepute among a number of officers. They considered that too much emphasis was placed upon it. This criticism is largely justified. The emphasis, however, is due to attaching too much importance to "expert qualifications," which is true of all our firing.

The real objective of 1,000 inch firing is to teach a thorough understanding of the idiosyncracies of the weapon, and to train men in its handling and mastery. This training is more from a mechanical standpoint. The man trained only on the 1,000 inch range is an expert manipulator, sight setter, mechanic. He knows the effect of various tripod settings, headspace adjustments, barrel packings, those parts which should be loose and those which should be tight. He is trained in the use of his hands to give him the greatest speed in manipulation and the most accurate bursts. He is fully competent to get a gun into and keep it in action. He is individually qualified and is ready to learn to fire at field targets as part of a gun crew or team.

This is the end of his "qualification," but not of his training. An additional ammunition allowance is provided for instruction in field firing. Whether or not this extra ammunition is included in his "qualification" is not half so important as is the manner in which it is expended to give the maximum training value.

The most difficult part of machine gun firing is the observation of strike. If the strike is on dusty ground and easily observed, the manipulation of the gun to bring it on the target is a simple mechanical procedure, which the gunner has already learned. When the ground is damp and the grass is high, the location of the strike is not so obvious, often impossible to see. Therefore this field training should be conducted from the standpoint of squad rather than individual training. Every man should estimate the range to the target and observe every round fired, just as though it were his individual problem. The mechanics of laying and manipulating the gun and pulling the trigger are simple when compared with the problems of range estimation, target designation, fire orders, fire control, observation and adjustment.

Unfortunately, this latter and most important phase is too often overshadowed by the importance attached to "qualifications." The system is sound; its application needs attention. Many of us would prefer to devote a greater proportion of our total ammunition allowance to field firing than is prescribed at present.

There are many reasons why the machine gunner likes the 1,000 inch range. With a limited area, and without large target details, he can reproduce the exact firing effect that he would obtain at long range. The answer is given immediately; the location of the "misses" is shown as well as the hits. The gunner can be shown why the "misses" are made; the effect of various adjustments is clearly apparent. If the firing were done at long range, the location of the stray shots would be lost.

Beyond question, 1,000 inch firing has a very valuable place in our scheme of gunner training. However, it must be regarded as a means to an end, not as an ultimate objective. It is an important phase of preliminary training, the ultimate objective of which is efficient combat firing by a well trained team.

Notes From the Cavalry Board

"The Cavalry Board invites any individual, whether or not a cavalryman, to submit for consideration constructive suggestions or ideas relating to new equipment, improvement of standard equipment, or to any problem or project under study by the Board. The Board will also welcome suggestions as to new problems that may properly be considered. Communications should be addressed to the President, Cavalry Board, Fort Riley, Kansas."

Bantam Cars:—Four ¼-ton Bantam cars have been received by the Cavalry Board for service test. These cars are designed to carry four passengers including the driver, or a pay load of six hundred pounds. Each car is equipped with four wheel drive and one car is equipped with four wheel steer. The power unit consists of a four cylinder, 45 horse power water-cooled motor, and the transmission has six speeds forward. The car has great cross-country mobility over all types of terrain and develops a fair speed on highways. Tests are being conducted to determine the pratical needs for such car in the cavalry.

New Type Message Book:—A new type message book was recently received by the Cavalry Board for service test. This book differs mainly from the present type book in that each message written has two carbon copies made without any effort by the writer. This will always assure the writer of a carbon copy of each message written. The book is slightly larger and contains less blank messages than the present book.

New Manuals:—During the past two months the Cavalry Board has reviewed a number of manuals being prepared for publication or for revision.

Other projects before the board are:

Antitank weapon (37-mm. Antitank Gun, M3).

Pull-type single shot auto-fire trigger mechanism for Browning Machine Gun, Caliber .50, M2, HB.

Chains, Tire, Kwik-on Rod.

Small bore practice in Caliber .50 Machine Gun Training.

Gun Elevator for Machine Gun, Caliber .30 Tripod Mount, M1917A1.

Rifle, U.S. Caliber .30, M1, Sectionalized.

Horseshoers' Tools.

Airplanes for Short-range Liaison.

Bullet Seal Inner Tubes.

Improvised Emergency Machine Gun Mount for Train Defense for Use Pending Development of Standard Mount.

Low Quarter Shoes.

Over-the-shoe Boots.

Kits, First-Aid, Aeronautic, Improved.

Modification of Horse Equipment (Bridles, Bits, Horse Covers, Stirups, and Stirrup Straps).

Study on Frequency Modulation versus Amplitude Modulation.

Radio Needs for Cavalry.

Textiles for Uniforms.

Looking at Both Sides:—Probably not a day goes by during these times of defense expansion that there does not appear in the press accounts of recriminations dealing with the question of equipment being obsolete or inadequate in type, needed changes, standardization, and so on. As we very well know, much of this is inevitable due to the speed of progress along some lines, especially that directly associated with mechanization. However, we cannot gainsay the fact that an unduly large percentage of the "bugs" which sooner or later are recognized in organization, doctrine, technique or types of equipment are bred and fostered by the well meaning though nevertheless unqualified individuals who jump at conclusions with little, if anything, more to justify these than their pet theories and special prejudices. We are quite prone to accept methods simply because "they have always been done that way," or, on the other hand, be quick to discard others that have been tried and tested over generations. A healthy skepticism is to be encouraged, but changes, or the introduction of new things should be preceded by a scientific laboratory test of *experience*. Many mistakes are made by premature judgment due to the lack of time or facilities for proper test. When time is an important factor short cuts are a necessary evil, but in no case should there be a lack of money, labor and zeal in an honest effort to reach a conclusion which must, above all, be practicable and realistic.

There is hardly a new project placed before the Cavalry Board which is not directly related to some previous projects, reports of which are on file. In studying these reports, it is interesting to note instances wherein, during the course of years and changes of regime, the conclusions of a number of projects relative to one piece of equipment have gone a complete cycle. We recall for instance, the case of watering tanks for cavalry units. About twenty years or so ago enthusiasm was packed behind the adoption of the canvas watering trough, M1918, in preference to larger tanks of various design. But since then *experience* has advised return to the circular tank holding about 250 gallons. A few years ago when the subject of changing the position of carrying the saber on the horse came up, a cavalry colonel, who was noted for his equanimity, remarked some-

what as follows: "Don't let it worry you, gentlemen. Since I have been in the service the saber has been hung in turn, on each of the four corners of the horse—it is now merely making another round." (Saber since discarded by our cavalry.)

There are, of course, as there must always be, aspects of our profession which can, by argument, as readily be proven to be black as white. For instance, in a recent survey of some of our best thought on the subject, we found there are about as many horsemen who advocate the use of the Pelham type of bit for general cavalry use as there are backing the bit and bridoon—and each side uses the same points in argument to support their claims! Much of the trouble lies in lack of experience in some cases, inability to analyze the effects of bits so that they attribute to the type of bit faults which originate from some other cause or which are only partially attributable to the bit—or because "it has always been done that way." Similarly there are time-honored customs of caring for horses, such as keeping blankets on after unsaddling, slapping or rubbing backs, etc., which may or may not be of value but probably never will be conclusively proven one way or the other.

It takes many years of peace-time soldiering to produce ten cents worth of experience, and some of our oldest officers and some who talk the loudest have had the least of that valuable treatment.

The plea is for more of the fruits of *experience*. The note under the heading of this section invites your suggestions, yet seldom do we receive the valuable suggestions from the personnel who are operating in the field with regiments. Many a soldier and officer gripes about some impracticable wrinkle in equipment, or in current methods, yet, though many useful bits of information might be gleaned from these sources they hesitate to sound off. This is a direct invitation to *individuals* to share in construction of more and more practicability and common sense in cavalry operations. Your confidences will not be betrayed; your ideas will be carefully weighed.

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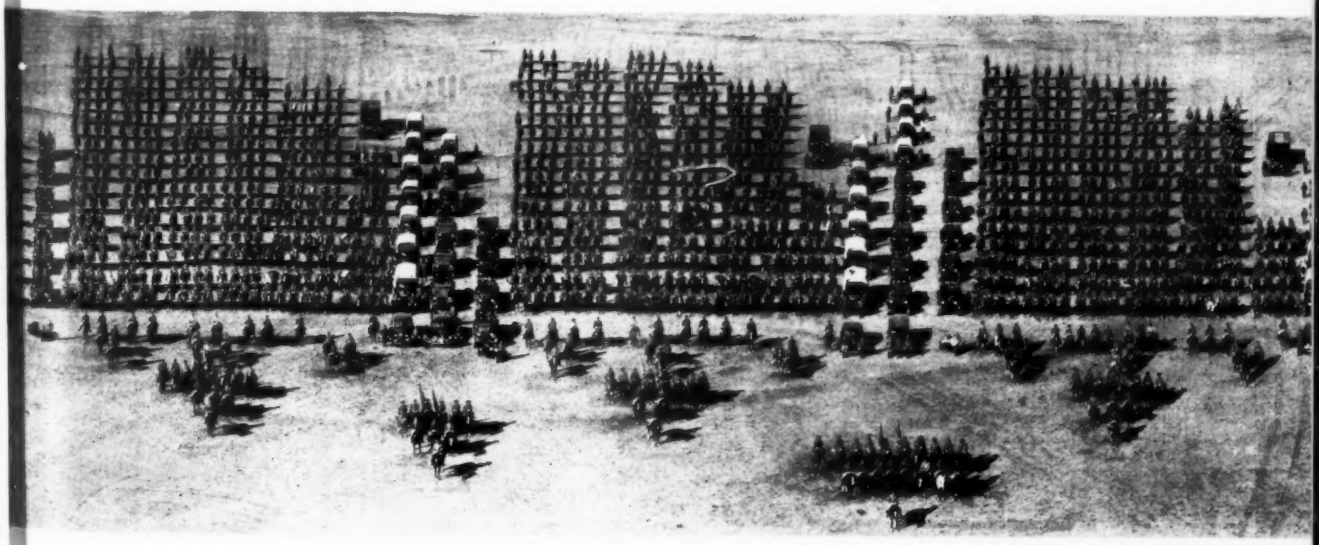
ONCE AGAIN, WE ASK

WHY NOT ACTIVATE—

15th Cavalry? **16th Cavalry?** **17th Cavalry?**



Foreign Reviews

Combats by German Cavalry Regiments in the East and West*

TAKEN literally, the above title is incorrect. It should really be: "Excerpts from the experiences by reconnaissance units, being integral parts of an organized Cavalry regiment"; because the regiment had been divided into several divisional reconnaissance detachments for the army in the field, and which detachments were assigned to all fronts. Nevertheless, the in peace time engrafted esprit-de-corps and intimate good fellowship sufficed to span the separation and to make the parts conscious that they were still belonging to the regiment. Such a reconnaissance unit—consisting of horsemen, bicyclists, and motorized details—constitutes the van of a division. It furnishes the division commander with information about the enemy and the terrain; on occasions it is charged to engage in combats ahead of the front. In a sense, the reconnaissance unit actually "combs" the terrain with horse, bicycle, and motorized scouting parties. Equipped with light and heavy machine guns, with grenade mortars, and Cavalry arms, it is, at times, able *per se* to break down the enemy's resistance. With this (secondary) armament, combined with its mobility, such a reconnaissance force is also well suited in protecting exposed flanks, in closing gaps, and to overtake in pursuits.

In the East

How was it in Poland? Every one of these reconnaissance units followed its own destiny. One advanced in the North through the corridor and East Prussia to Grodno. The second fought its way from Silesia and, passing Lodz, to the region between Weichsel and Bzura. The third, starting from Slovakia, thrust through to beyond the San.

From the large number of greater and smaller engagements, especially characteristic episodes are selected.

On September 16th the Polish forces in the region between Przemysl and Lemberg were to be attacked on three sides by German units. The reconnaissance party was marching about 20 kilometers ahead of its division advancing from the South toward the highway Przemysl-Lemberg. Three scout detachments are in the lead, one of them as the advance guard. The latter flashes the report that it was about to overtake, and could take by surprise, a column of Polish reserves in a village. Shortly later, two scouts brought back over 70 Polish prisoners. In a little while, the same scout detachment reports strong resistance from the next village, Dabrowa. A detachment from the mounted squadron gallops to the front. It also runs into heavy fire at the outskirts of the village. The scouting party had already entered Dabrowa. The enemy, apparently surprised, is being reënforced.

The unit commander decides upon a characteristic Cavalry attack. Supported by the Cavalry contingent with its secondary armament, frontal attack is made with two parties. The bicycle squadron and a mounted detachment, veering to the right, are thrust into the deep flank of the enemy. Lieutenant R, who had pushed farthest to the right with his mounted command, surprises a Polish ammunition column. One horseman brings back 150 prisoners. Dabrowa is in flames. Forced by the attack on two sides the Poles in the village surrender. The remainder flees into the woods to the West.

Lieutenant R with his command forming a new point, is sent forward to the next village. After reaching the objective he gallops, accompanied by one man, toward the brow of a nearby hill. From there, after carefully concealed approach, he spots two Polish batteries. One of them had its guns pointing West, the other was in the act of changing position. On instant impulse the lieutenant rides to the top of the hill. With a few pistol shots he surprises a group of officers wholly unsuspecting German Cavalry in their rear, so that they obeyed the command to lay down their arms. When the detachment reached the village shortly after, the march columns of the two captured batteries were found standing there.

The booty taken by the detachment on that day consisted of: 8 field pieces (10.5 & 15 centimeter) 28 machine guns, 520 small arms, 640 prisoners, 170 horses, 2 harnessed ammunition columns.

The action is a leaf out of the book of fame of Cavalry—sudden and energetic onset and seizure led to

*From Deutsche Kavallerie-Zeitung.

. . War Experience . .

great success over a far superior enemy. The jubilation over the feat was dimmed by the sorrow over 6 comrades, who gave their lives in the engagement at Dabrowa.

German Cavalry

After long marches interrupted by many affrays and skirmishes in the course of which it was favored on September 12th to take decisive part in closing a gap, also preventing the breaking through by the Polish Army encircled in the region surrounding Kutno, another reconnaissance party was leading the way toward the Weichsel on September 18th.

Hundreds of soldiers of the disintegrating army had surrendered to this force both in villages and even in the open country. The tail of the mounted squadron which constituted the advance guard had barely entered the hamlet Zaluskow, when the squadron was suddenly assaulted from all sides with musketry and machine gun fire. The Pole fired from the grounds of an estate, from houses and gardens, from the edges of nearby woods and low hills. While incurring losses the the lead horses found cover behind strawstacks. The fire by the Poles was so devastating it prevented the deployment of the squadron. Even the bicycle squadron had to stay impotent under the enemy's machine gun and Artillery fire.

However, although attacked from three sides, the horsemen did not surrender. One machine gun after another of the leading unit was silenced. Finally Lieutenant H personally operated a machine gun. Later he was found shot down behind the piece, its belts emptied.

The fight had lasted from early dawn until into the afternoon. Not until night did the Poles retire under heavy Artillery fire. A few comrades who had fallen into the enemy's hands, could be recovered. Many dead, including 2 officers, numerous wounded, all of them troopers of the 5th Squadron, strewed the field of battle.

Here, under most desperate circumstances, the morale of the regiment had proved itself—alone and unsupported in an open field and pitted against heavy odds, the squadron does not yield an inch, in order to enable its division to continue its advance the next day. One man after another goes down, yet the squadron stands fast. For it there is no retreat, even though the mounted impetus has been frustrated, but only bulldog and bitter tenacity, to the last cartridge, to the last man.

Thus, Zaluskow becomes the by word for the most illustrious feat by the Zieten-riders (troopers) in the Polish campaign, even though its effects were not as striking there as they were on other occasions.

In the West

In the West the horsemen, far in advance of their main positions, were required to make and maintain contact with the enemy. As on September 9th a French scouting party approached the post of such a detachment, the commander of the latter decides upon a counter stroke. After a few machine gun bursts by the Germans the enemy falls back to a small village. Without hesitation Lieutenant V. D. pursues with two men and a machine gun. At the first building he is met by machine gun fire. Cover behind the first house, a short fire duel, a dash to the next house and toward the enemy who tries to cut off the three Germans, and a few hand grenades thrown into the French position. As the dust settled a few Frenchmen were seen running back. Carefully advancing, the formerly occupied house is reached. The hand grenades had done their work. Three prisoners, two of them wounded, can be brought back. They are the first ones captured by the division.

Successful were two other undertakings by the same squadron on that same day. It so happened that the prisoners brought in then by the mounted detail belonged to the French Hussar regiment No. 3.

A few days later a scouting party from the same squadron located an enemy's outpost or observation station. 1st Lieutenant H decided on October 2nd to dislodge the enemy with a view of taking prisoners. Before dawn three shock squads fall-in equipped with machine guns and hand grenades. Unobserved they come within about 75 meters upon the enemy. The outpost, taken by surprise, was captured with hand grenades, machine guns, and pistols. Still another nest was lost by the French after a brief fight. This time, however, heavy machine gun fire broke out from positions farther back. The combat had to be broken off.

In this manner troopers took instant advantage, wherever opportunity beckoned, to carry out individual undertakings on their own initiative. Here also, they proved their mettle in attack.

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Tank Action in France

NO detailed actions of the First World War have been so minutely studied as those in which tanks took part. By the end of the war and through the two decades that followed it, the military authorities of all armies realized that the tank had brought a new and powerful means of ground combat to modern warfare. But tank action in the First World War was limited. It is true that Cambrai and Amiens each saw several hundred tanks in action. These tanks, however, were practically of trial types. The mechanical improvement that followed the war was so great that in spite of the attempt of many writers on tank tactics to "prove" their suggested doctrines from what happened in 1917-18, the more serious student of infantry-tank warfare could see that the "lessons" of tank fighting in the First World War could not be taken as definitive, but only as indicating what place the tank might have in wars of the future. The uses of tanks in China, Ethiopia, and Spain, were also limited, although here it was possible to observe more modern types. Thus we have had to wait until the Battle of France to see fast modern tanks used wholesale against any kind of serious opposition. Only now are detailed accounts of tank action becoming available to American military readers.

In the British magazine *The Tank* for October are several such accounts, two of which follow. The first, by Second Lieutenant V. D. C. York, describes an action at the bridgehead of Courcelles:

On the afternoon of June 8, 1940, the battalion (a battalion of the Royal Tank Regiment) crossed the River Seine between Courcelles and Gaillon.

At about midnight orders were received from battalion headquarters to the effect that Captain Carey-Thomas and three tanks of B Squadron would proceed to the Courcelles bridgehead and would hold it, at all costs, until it was either blown up by the French or until he was relieved. One scout car and the B Squadron liaison agent were attached to this force for the purpose of reconnaissance and to facilitate intercommunication between the French and ourselves.

It was anticipated that the Germans would attack and attempt to force a crossing at dawn on the following day (June 9) and, with this fact in view, Captain Carey-Thomas and his composite troop, consisting of one Cruiser Mark I and two Cruisers Mark III, were ordered to be in position on the bridge by 3:00 AM.

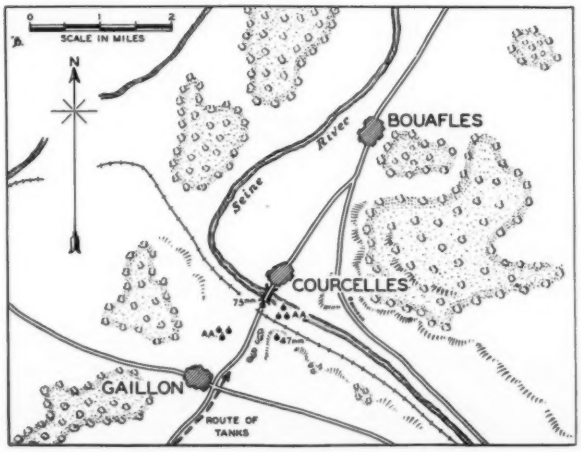
At 2:30 AM Captain Carey-Thomas ordered his force to advance, but having gone some 500 yards towards Gaillon, the A Squadron cruiser (commanded by Sergeant Urry) became a casualty owing to a mechanical breakdown.

The road from Gaillon village to the bridge itself was blocked by every conceivable type of vehicle—refugee carts, cars and lorries, French Army lorries, and French troops, who were retreating over the Seine. Our drivers, already tired out, performed the seemingly impossible as they wound in and out of this struggling, mobile mass. We arrived at the bridgehead about 2:45 AM, and after getting the tanks under cover from the air, Captain Carey-Thomas and myself went forward to "liase" with the French officer in charge of the demolition party and bridge defenses. This officer was a lieutenant in the artillery. He had under his command one 75-mm. field gun (later reinforced by another one of the same caliber), one 47-mm. AT gun, and a battery of dual purpose light AA-AT guns. The 75-mm. was dug in extremely well on the bridge itself, covering the approaches to it from the northern bank, whilst the AT gun enfiladed the bridge and its approaches from an excellent position on the right of the bridge. The AA battery was split in half—three guns being mounted immediately right of the bridge, and three more situated about three-quarters of a mile back towards Gaillon in a field on the left of the road.

The French officer asked Captain Carey-Thomas to get into a position from which he could cover the bridgehead and support the detachment there.

We made our way back to the tanks through the mass of refugees that was still pouring over the river, and Captain Carey-Thomas gave his orders. I was to take my tank, a Cruiser Mark III, forward to a line of trees some 500 yards behind the bridge on the right of the road, and to cover and support the French position. He himself was going to take up a position on the same side of the road about 400 yards behind me, from whence he could support us. Both tanks were in position at 3:00 AM. Now began a long period of waiting for a dawn attack which never materialized.

The road from Gaillon to Courcelles was almost dead straight and there was little or no cover on either side with the exception of the two belts of trees in which we had our positions. Some 400 yards in front of the forward belt of trees a railway line ran parallel to the river, and in front of this a row of houses flanked the road almost up to the river and on either side of the bridge.



It was in the last of these houses on the right that the French officer had his HQ. Between the railway line and the line of the river, flanking the road, were two deserted factory buildings. All around, on our bank, the ground was very flat and featureless and fairly boggy within 50 yards of the Seine. On the opposite bank a cluster of houses around the bridge marked Courcelles itself, while a densely wooded ridge above entirely commanded our positions. To the right of the ridge a line of about six or seven houses stretched away, ending in a lone flagpole.

The morning passed slowly and we found time to wash and shave, and also to eat some stew from the container that we had brought with us. This worked wonders, and we eventually managed to get a few moments of sleep by working a system of reliefs on the gun and in the driver's seat. The men, though nearly worn out after three days and nights on the move, were in the best of form and determined to stop Jerry.

By 1:00 o'clock our number had increased by four, for some lost and weary British soldiers had been gathered together by Captain Carey-Thomas. About this time Captain Carey-Thomas and I went forward to the bridge to find out from the French what news they had of the enemy advance. While we were talking to the lieutenant, orders arrived by hand line for him to close the bridge to all traffic. This made us much happier, for it meant we could sight our guns to defend the obstacle without the fear of having to fire into the mass of refugees should the enemy attack. But for an hour after this order the line of people was still moving along the road—faster now, for we had been bombed twice that morning, and the enemy's forward elements were reported to be only seven kilometers away.

At 3:05 PM an enemy armored car pushed its way boldly up to the bridgehead and was promptly put out of action by the "75" on the bridge. A volunteer picket of six artillerymen armed with rifles, which had been posted on the northern side of the bridge and whose task it was to spot and report any advance by forward elements, sent back a message to say that they had seen some enemy tanks advancing towards them. At 3:15 PM the bridge was blown, and this picket (their numbers now reduced to four) volunteered to remain on the German side until they could hold out no longer, when they would attempt to swim back to us across the Seine. This gallant little band was not seen again.

As soon as the bridge was blown the French officer in charge signalled us up to him. On reaching his rendezvous he told us that, as far as he knew, the Germans had established some machine-gun posts on the left and right of the bridge itself—both in Courcelles and on the wooded ridge above it. He told us also that some infantry had swum across the river and were endeavoring to work around his flanks under cover of the factory buildings. This very gallant officer, armed only with his revolver, directed operations from a most exposed position on the river bank throughout the action.

Captain Carey-Thomas made up his plan rapidly. As the enemy appeared to be established on both sides of the bridge, we were to adopt independent tactics—he would take the right and I the left.

The enemy infantry that had got across to our side of the river were by now around on each flank—they did not apparently expect us, for they were not making a great attempt to conceal themselves. Machine-gun fire from Captain Carey-Thomas's tank quickly mopped them up. While this was going on his tank had been moving off the road to the right and getting into a position by the French HQ. As the nose of the tank swung to face the bridge again Captain Carey-Thomas saw an enemy light tank in a stationary position on the bridge. Its crew were dismounted and apparently making an inspection of the damage done to the culverts, etc., of the bridge. This tank he put out of action with one round of two-pounder, machine-gunned the crew, and then destroyed the tank with another round of two-pounder. Immediately after dealing with this tank he spotted another one (medium or heavy) approaching the bridge from amongst the trees which lined the road. Three two-pounder shells hit it like a machine gun and the crew tried to get out, but were dealt with.

In the meantime my tank had advanced up the road towards the edge of the break in the bridge and, having got within 50 feet of it, had been fired on by a heavy machine gun, which appeared to be in position in a house on the left of the road across the break. The gunner silenced this with three bursts from his co-ax gun, and almost immediately afterwards another heavy machine gun opened up on the troop commander from the region of the flagpole on the ridge above. He replied to this with all three machine guns and my tank reserved until it could also bring fire to bear on this target and supported him until the machine gun sheered its recoil pin and jammed. While the loader tried to repair this and improvise a pin I ran into a field on the left of the bridge and endeavored to pick up another target. It was not long before we found one.

Moving from left to right across our front and apparently seeking cover in the trees that flanked the shore there appeared what was probably the other half of the enemy section of tanks—a medium (or heavy) and a light. The gunner took the big one first and hit it with five two-pounder shells—no one got out of it. One more two-pounder stopped the light and two more finished the job completely. Again we were fired on by a machine gun from amongst the trees. As my co-ax was out of action I could only use the quick-firing gun, and the first shell fell slightly left and minus. An anxious few minutes followed, for we got three shells in quick succession which would not allow the breech mechanism to close, owing to slight enlargement of the cartridge cases. As the loader was getting rid of these, machine-gun fire from our right rear made me look sharply around, and I saw that our scout car had come up from the rear and was supporting us with his Bren gun. The

gunner, who was a trooper in a cavalry regiment, was one of the worn-out men we had gathered around us that morning. Despite his condition he kept the gun going all the time—raking the factory building in front and mopping up the remaining Germans on our side. A good round was now in the breech of the two-pounder and this time the gunner was dead on. Three shells completely silenced the machine-gun nest and three more demolished one side of the factory wall.

The enemy had now opened up on Captain Carey-Thomas with HE mortar. He put the mortar out of action with a round of two-pounder and then his hull guns settled the matter.

We on the left were suddenly subjected to this fire as well, and in addition the Germans had got either a field gun or an infantry gun somewhere on the heights above us and were searching for us with that also. Running to and from the bridge to the far side of the field we plastered the mortar and put it out of action, but during this shoot the boggy ground caused the near-side track to run half off the sprocket, so that it was travelling around a portion of the final drive box. The driver, by very fine driving, kept the tank going throughout the whole of the rest of the action. The infantry gun was still shelling us, and so, moving very slowly and cautiously, we went back towards the road. I told the gunner to put maximum range on his drum and to rake the top of the ridge with his two-pounder. This he did, and after the seventh shot that gun stopped firing, so we put another five shells into the same place, and as he did not open again we ran straight back on to the road in time to see Captain Carey-Thomas completely smothering another heavy machine-gun post, which had opened up on him. While he was doing this I demolished the wall of a suspicious-looking house in Courcelles which the French said held an AT rifle.

After this last salvo quiet reigned everywhere, and the French officer led some of his spare numbers down to the river banks to reconnoiter. He came back to say that the enemy appeared to have withdrawn from the bridgehead completely, and that he was now going to try to reorganize his own defenses and await reinforcements. So, down to the last of our ammunition and with repairs to be carried out, we went back to the nearest of our two original positions.

At about 6:00 PM we withdrew to try and find the battalion and rejoin it.

During the action both tanks were hit by heavy machine-gun and (it is thought) AT-rifle fire, but no ill effects were observed on the armor.

The second personal experience of tank action, given below, is written from the viewpoint of a tank soldier, Trooper Bennett. The action he describes took place near the Somme River and tells vividly what happened within his own tank when it was disabled during combat:

During the advance we encountered rather stiff opposition from the top of the high ground just north of Moyenville. This ridge was practically bare of cover except for a few stacks of hay standing about and a small clump of trees at the top. Everything appeared to be working out well, and the gunner soon put a machine-gun nest out of action. On advancing farther up the slope we saw what appeared to be the roof of an ordinary car, and while the tank commander was examining it through his binoculars two AT guns opened fire at other tanks on either side of us. We advanced within about 100 yards of these two guns when a third gun opened fire at us. His first shot struck our tank in front of the radiator, severely wounding the tank commander, Second Lieutenant Ewart. Unfortunately, we knew nothing of this until he collapsed partly across the guns and between the pedestal and the hull of the tank. This jammed the turret with the guns pointing upwards. I shouted to the driver to make for cover, which he did. While we were turning, the tank was hit again by the driver's compartment, making short work of the Pyrene. After turning around another shot struck the rear suspension, but did very little damage. The driver reached the cover of one of the stacks without any further damage.

Thinking we were fairly safe behind the stack we dressed the tank commander's wound while Jerry still kept firing at the stack till finally I noticed nothing was left that could give us any cover. Then we decided to get down the hill a bit farther, gaining what cover the brow of the hill afforded. As soon as we started to move again we seemed to draw more fire, but managed by taking a zig-zag course to avoid any further damage.

As soon as we were out of sight of the enemy we stopped and got the tank commander out of the tank. This proved to be a difficult job, as he was a big man and jammed awkwardly in the turret. We managed to get him through the driver's compartment and lay him on the ground beside the tank. Very soon a French medical officer came up, but was too late, as he had just died.

As the French were supposed to be holding this position we were ordered to leave it to be recovered later. Later on these French troops withdrew to the bottom of the hill and we were told to go with them. We carried the tank commander's body to a French armored car standing near and this took it to the next village, ourselves riding on some French motorcycle combinations. There the body was transferred to one of our own light tanks, we riding on another to the rendezvous. It was there put in an English ambulance and taken away. The following day we were taken farther behind the line to join the remainder of the squadron. Our tank was later salved and brought to Aigneville.

German Cavalry Doctrine

(Editor's Note: During 1940, under the able guidance of Major General J. K. Herr, Chief of United States Cavalry, our cavalry arm made great strides in modern development, organization, and efficiency. Thus, as we begin the year, 1941, we pause to compare our cavalry doctrine with that of other major nations, and singularly we find that the present German Cavalry doctrine is almost an absolute parallel—as indicated by the following excerpt from *The Book of the Army* published under the direction and supervision of the German Army, by the German Government, 1940.)

* * *

The Horse Cavalry Regiment

THE introduction of motorized organizations has caused much discussion, relative to the employment of horse cavalry. The introduction of the machine gun and motors has restricted horse cavalry in theaters of operations in middle and western Europe. The cavalry problem has been solved in different countries in various ways. Connected with these solutions are the theater of operations, particularly its extent, the terrain, roadnet, the climate, the season of the year, and supply and communication possibilities. Another important consideration has been whether or not the country is primarily an industrial one and therefore, during peace times, is concerned with the development and operation of motors, or, if it is an agricultural land, which lends itself to the use and development of the horse. The progressive development of tactics, resulting from new discoveries and increasing potentialities of weapons, brought about earnest study to determine how the horse cavalry would fit into the changing conditions on the battle field. All of the new discoveries and the development of tactics have not, in any respect, changed the fact that the most important asset of the cavalry is the horse.

Germany cannot rely entirely upon horse or upon motorized cavalry because of its geographical position and the military-political situation. Modern cavalry is somewhat changed from the cavalry of the World War, and the great mass charge previously employed belongs to the past.

Since the appearance of the motors in the theaters of operations, airplanes and armored reconnaissance units have assumed the former reconnaissance missions heretofore a responsibility of the horse cavalry. These many reconnaissance missions tended to dissipate the strength of the horse cavalry. Today its maximum combat strength can be mustered for its most important rôle: employment in the battle itself. In this connection, the army cavalry participates in the battle *en masse*, whereas only small groups are now organically assigned to organizations such as infantry regiments, to perform local reconnaissance.

The army cavalry is an independent force. It consists of horse cavalry regiments, which are combined in cavalry divisions, and the latter are further organized into corps organizations consisting of from two to three such divisions. The cavalry division is, from a combat viewpoint, similar to the infantry division and inhibits similar independent and self-contained action on the battle field.

Speed, mobility and tremendous fire-power adapt the army cavalry to many missions, and render it temporarily superior to a numerically stronger, but less mobile opponent. The battle field (cross-country) mobility of the cavalry is an important asset and remains its greatest advantage over motorized units. In the West, one finds numerous gardens, fields and meadows surrounded by wire fences which increase the difficulties when cavalry units attempt cross-country movement and, on the other hand, the excellent roadnet favors motorized units. The crossing of streams, the ability to advance via small paths and unimproved trails are definite advantages. In the East, where the cross-country ability of the animal can be much better exploited and also where the roads, particularly in the spring and fall and often in the winter for long periods of time are impassable to bicycle and motorized units, horse cavalry is of great importance. Another advantage which the cavalry has over the infantry is the capacity to quickly mount on its horses, to maneuver and thereby increase the opportunity for surprising the enemy. The attack is, as a rule, launched from movement in order that the rapid approach on the enemy, with its attendant surprise, may be fully exploited. From the development, the troops launch forth directly to battle. In this manner, they seize the initiative and maintain it. Rear elements can rapidly advance into areas available for employment as the situation develops. Elements of the command are held out during the battle, to provide reconnaissance and security on the flanks. As the situation develops, they may be employed in the pursuit of the enemy or, if the withdrawal is necessary, to cover a withdrawal. The cavalry is usually employed to attack as do foot troops against the flank and rear of the enemy. Because of its mobility, it is particularly adapted to encircling maneuvers. Further, it can quickly effect a double envelopment of a withdrawing enemy or of a

less mobile one. It is better able than the infantry to engage in battle or to avoid it, and once engaged, can more easily break off the action. Pursuit and retreat are the two most important forms of maneuver in which cavalry may be profitably employed. In the pursuit, one must reckon with numerous road demolitions which delimit or restrict entirely the operations of motorized and mechanized troops. In a retreat, the battle must be quickly broken off and troops enabled to disappear entirely. The breaking off initially occurs over a broad front, and the cavalry, because of its greater cross-country mobility, can do so and assemble far to the rear, whereas infantry or motor elements are practically restricted to roads.

In the initial stages of the World War, various successful uses of the cavalry as army reserve were made. It is much better adapted than other arms, to attack isolated or distant positions. Modern army cavalry exploits, to the fullest degree, its mobility and firepower, from the moment it arrives on the battle field. It is, therefore, immediately available to attack. It cannot only attack, but thanks to its weapons, with numerous heavy infantry weapons and artillery, and to its mobility, can effectively block a very broad front. As a result of these capabilities, it has important use as army reserve. Both characteristics, the attack and the blocking of a broad front, give the commander who has cavalry as army reserve, a means which is very flexible on the battle field. The cavalry is not tied down by inflexible lines of communication to the rear. The cavalry is seldom employed in depth upon a small front, but in areas which do not restrict its mobility and movement. Exploitation of a favorable turn in the situation is important. This often requires strong enveloping forces operating on a broad front with little depth and practically no reserves. The infantry, on the other hand, must retain a strong reserve and, usually, depth in its formations to provide for any contingency. Further, once the infantry becomes engaged in combat, it must follow it through, because it is so difficult to break off hostilities, whereas the cavalry, because of greater mobility, can very quickly break off.

The cavalry can, without excessive fatigue, negotiate longer and faster marches than foot troops. It can very easily depart from the usual march rate. For these reasons, the element of surprise is more easily accomplished by cavalry. Mobility and speed do not alone create conditions which render victory more probable. Success in battle is generally determined by the proper use of weapons. The mobility of the cavalry makes it possible to move weapons quickly to unexpected points and to the more vulnerable areas of the hostile position. Mobility and speed in difficult terrain, without sacrificing battle strength, are the important means through which cavalry accomplishes surprise. Without overexertion and overemphasis on rapidity, all tactical concept of the cavalry must be based upon speed and mobility. Most of the missions assigned to the cavalry make full use of its great mobility, particularly cross-country, and its speed. The cavalry is not so restricted as the infantry in the selection of the attack direction and the base of maneuver. It frequently attacks from broad assembly areas and from different directions. The more restricted the cavalry mission is, the more its mobility and combat employment will resemble the infantry. There is not a great deal of difference between infantry and cavalry, when the horses are assembled at considerable distance from the riders, particularly if it is attacking a prepared defensive position, or engaged with a superior enemy, both of which would require narrow zones of action and employment in depth. The employment of large groups of cavalry, mounted on their horses, seldom occurs on the modern battle field. Small groups, particularly on reconnaissance and also in the pursuit, may feasibly operate on the horses. Every cavalryman must be convinced that greater success will result by utilizing the mobility of his horse and riding to battle as closely as possible rather than dismounting upon the first contact, and sacrificing his ability to outmaneuver the enemy. Further, against an enemy whose morale has been shattered, a mounted attack may enjoy unusual success.

A thorough knowledge of the infantry battle technique provides principles and a background for the conduct of cavalry engagements. The individual cavalryman fights when he is dismounted, exactly as an infantryman fights. The differences between the two occurred before the man dismounted from his horse. Both arms have the same training regulations for combat. Fire and movement are important to cavalry tactics exactly as they are to all the other arms. However, other arms, being less mobile, mobility does not play the important rôle it does in the cavalry. Cavalry units do not dismount in the initial stages of combat, if it is possible to continue forward. They ride on until the hostile fire compels them to dismount. It can so happen that the adjacent unit has already been compelled to dismount and fight while it may be possible that a particular unit can remain mounted and advance. The action of cavalry fighting exists in the rapid employment of mobility and fire. Closest coördination of these two accelerates the advance. The cavalry advances against the objective in order to bring effective fire at the proper time, and must shoot well in order that it can again ride; which means in order that it can again exploit its mobility. The formations on the battle field, when dismounted, correspond partly to those adopted on foot. The march formation is usually with two riders abreast, followed by the others in column to facilitate the use of cover and concealment both, against ground or air. In riding upon narrow passes, through woods, etc., the riders break into single column. To cross a flat open stretch of terrain quickly, or when contact with the enemy is imminent, formations are undertaken to minimize casualties. As a rule only part of the force develops initially, while the remainder is retained in closer for-

mation, awaiting developments. The cavalrymen deploy to the right and left of their leader, generally upon order of their commander. If depth and broad front are required by the situation, the deployment should be in wedge formation. One should not believe that a good horse suffices in modern cavalry. The advance over all types of terrain over various obstacles, which is today required of reconnaissance units and also marching in large organizations require great stamina and excellent riding ability on the part of the men, unless one expects to have a large number of horses and riders falling out. It is senseless to believe that the value of training for horse and man has diminished because the cavalry now actually fights dismounted.

In order to avoid hostile obstacles and fire, full use of rapidity is necessary. In battle one must leave the roads and operate rapidly over diverse terrain and in order to do this, it is essential that both horses and riders be in excellent condition and well-trained. A good rider estimates the capacity of his horse. He must conserve the strength of his animal on long marches. The most important requirement for long marches in the cavalry is a well-trained rider. It is a well-known fact that a horse properly ridden will outlast a horse of similar stamina but poorly ridden. Another advantage of thorough training both for men and animals, is that an experienced rider and trained horse do not become so tired on unusually long marches. The long ride is, however, not the most important part of the cavalry's work; the important job is the fighting which follows the long march. The fresher the dismounted cavalryman enters the battle, the better his opportunity for success. In order that the mobility of the cavalry is not too inferior to that of motorized troops, forced marches are of special value in training. The successful conduct of such marches requires careful attention to the horses. For short stretches the cavalry can march at very fast rates. The average speed of cavalry upon long marches, without including long rests, amounts to 7½ kilometers per hour (4½ miles per hour). At this rate the cavalry can, without overtaxing the animals, cover very long distances. The horse holders must also be carefully trained for they play an important rôle in exploiting the mobility of cavalry units in battle.

It is essential that cover and concealment be provided for the horses being held, while the riders are engaged in combat. In order to accomplish this, it may be necessary to dismount quite far to the rear. Inasmuch as led horses may be trotted or even galloped forward to their riders, the fact that they are well to the rear should not be a great disadvantage. The mounted regiment is organized into two half-regiments and each half-regiment consists of a staff, communications platoon and from three to four rifle troops, one heavy machine-gun troop, which also includes heavy mortars, one heavy troop which includes a platoon of pack-supported cannon, a platoon of antitank guns, an engineer platoon and a platoon of armored cars. The rifle troop consists of the headquarters group, three to four platoons and the combat trains. A platoon consists of platoon headquarters with from three to four groups, and each group is divided into three cavalry sections, each consisting of four cavalrymen. The armament of the cavalry is exactly the same as the infantry. What the infantryman requires in battle is also required by the cavalryman; rifles, bayonets, light and heavy machine-guns, infantry cannon and mortars are all exactly the same as the infantry, except that provisions are made for their transportation upon animals. The light machine-gun is carried upon a pack animal. Further, each troop includes a group of pack animals carrying ammunition. Medical supplies are also carried upon pack animals. The combat trains are drawn by four animals per vehicle. The heavy weapons are also drawn by four animals which enables them to follow closely the units they are supporting.

The communications platoon includes radio and telephone groups and has the mission of maintaining communication between the staff and the next higher echelon and with the half-regiments. Communications equipment is partly carried on animals. The most important mission of the engineers with the cavalry includes the building of crossings over obstacles which cannot be avoided, and the bridging of streams, the removal of artificial obstacles and effecting demolitions. For the construction of small crossings and for limited demolition work, the engineer company carries the required equipment on horses. Often it will not suffice and material must be obtained from nearby sources or higher units. The training of replacements to include the riders, riding instructors and the animals is a responsibility of the troop commander. The training of animals from the Army Remount Depots lasts two years and is conducted in keeping with the regulations covering same. The training period is also influenced somewhat by the age of the animal, to insure that the horse is not injured in any way. The strenuous requirements upon both the riders and the horses in the modern army suggests continuous training and conditioning of both during the entire year. *Hunting is an excellent means of training for cross-country employment.* Independent action, flexibility, mobility and speed are the characteristics of the cavalry. Field Marshal von Moltke said, "The successful operations of cavalry are dependent upon speed, however, only upon speed in recognizing and understanding the situation, speed in arriving at a decision, and finally, speed in carrying out the decision."

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Cavalry Motorcycle Troop

By Captain C. P. Bixel, 6th Cavalry

QUESTIONS have doubtless arisen in the minds of CAVALRY JOURNAL readers as to just what a motorcycle troop is and how it is employed. New as the organization is, several of them have been or are in the process of being organized in the Cavalry and allied arms. This article is intended to give a picture of the motorcycle troop as organized and employed in the 6th Cavalry (H&M), one of our two Regular Army Corps Reconnaissance regiments. The organization of other such troops is the same, their employment may and probably will vary, depending on the type of unit of which they are a part.

As a background it might be well to review sketchily the organization of the 6th Cavalry. It consists of two squadrons, a Headquarters and a Service Troop. The 1st Squadron, Horse Portée has three normal rifle troops, "A," "B," and "C." The 2nd Squadron (Mecz) has two scout car troops "E" and "F" and a motorcycle troop designated "G," the subject of our discussion. Henceforth, in this article, organizations will be referred to by their letter designations for ready identification.

Let us consider G troop from the standpoint of (1) Organization and Equipment, and (2) Tactical Employment. It must be remembered that the troop as constituted, and the 6th Cavalry as now organized have been in existence only a year, that equipment, organization and tactical doctrine have been highly experimental. Experience in the Army maneuvers and a Corps maneuver in 1940 has crystallized some points, but others are and will continue to be subject to change.

ORGANIZATION AND EQUIPMENT

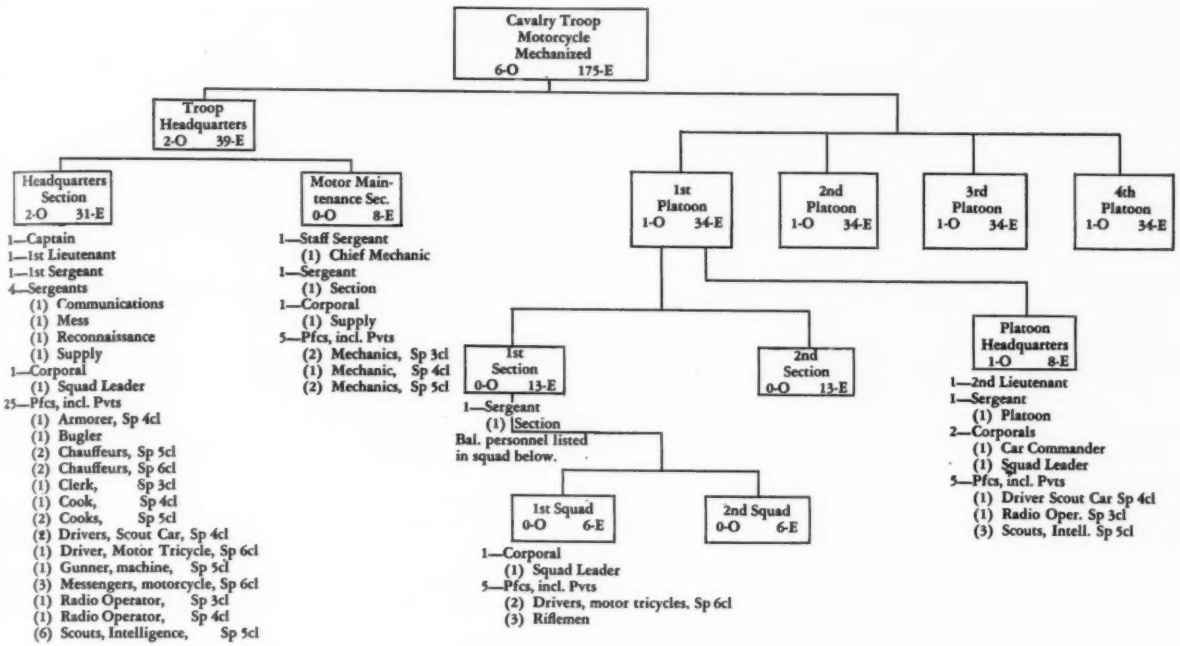
In the belief that the old Chinese maxim that "a picture is worth a thousand words" still holds, there follows a chart showing the Organization of the Motorcycle Troop down to and including the squad. The personnel of section, platoon and troop headquarters are listed according to job, rating and rank. A study of this chart will be helpful.

In amplification of what otherwise might seem cold rectangles and figures let us see what the chart indicates in terms of fighting men, vehicles, arms, communications, and supply.

The squad, the basic unit, is mounted on two side car motorcycles in lieu of motor tricycles, one man riding behind each driver on a tandem, on "buddy" seat. The section, the equivalent of an infantry squad in man-power, is commanded by a sergeant who rides a solo motorcycle. The platoon headquarters except for the scout corporal and three intelligence scouts who ride solo motorcycles, are mounted in an M3A1 type scout car.

Troop Headquarters is divided into a forward and rear echelon. The forward echelon consists of the command agencies listed in the chart, mounted in two scout cars and on thirteen motorcycles, solo and side car. The rear echelon consists of the maintenance section and the mess, supply and clerical setup normal in any troop. Four 2½ ton 6 x 6 GMC trucks, a ½ ton Command reconnaissance car and three motorcycles with side car are provided for the rear echelon.

Each officer and man in the troop is equipped with the service pistol. Solo cyclists are armed with the M-1 rifle, caliber .30 in lieu of the submachine gun, caliber .45. Drivers of the motorcycle with side car are equipped with the submachine gun, caliber .45, while other members of motorcycle squads use the M-1 rifle. All scout cars are armed with two heavy machine guns, caliber .30 in lieu of the light machine gun and in addition carry one machine gun, caliber .50 and a submachine gun, caliber .45. They are equipped with the SCR-245 radio. In this regiment further armament is provided by six antitank mines in each scout car and

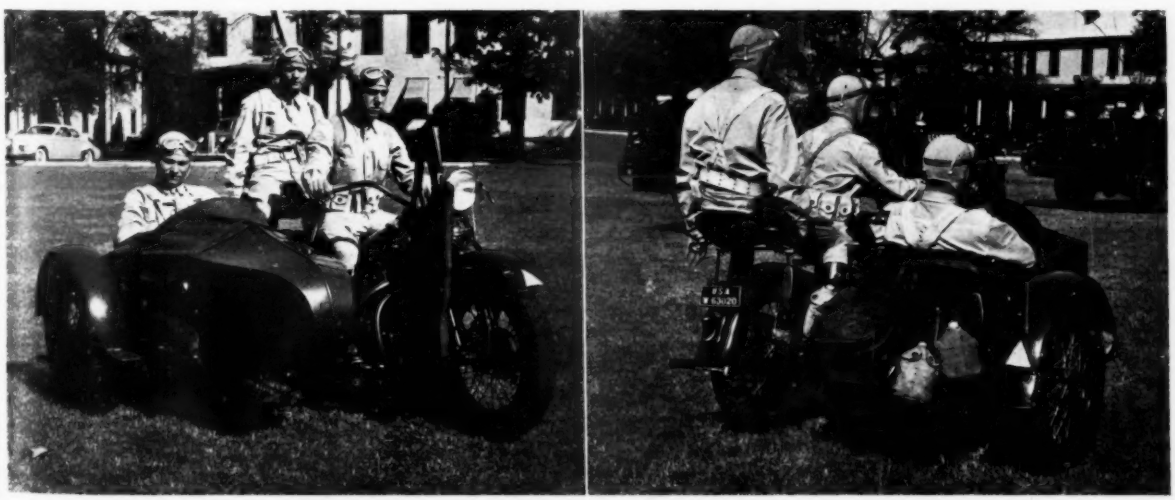


one in each side car motorcycle. At present these mines are in dummy form only. Three of the trucks carry a light machine gun while the fourth mounts a machine gun, caliber .50 for train defense.

Personal equipment of the individual soldier is carried in saddle bags and in a modified roll which are fastened to the motorcycles and carried in the scout cars by members of their crews. Troop equipment of course is carried in the cargo trucks which are assigned on the basis of two combat, one kitchen, and one maintenance, the latter being equipped with a winch in front for mobilizing stalled vehicles.

A résumé of the organizational and equipment setup within the troop gives us in brief four combat platoons, each with its own reconnaissance and communication agencies controlled by a headquarters able to reconnoiter on its own if necessary, to communicate with, supply, feed and maintain any and all of its platoons. In addition troop headquarters can communicate with higher headquarters. Normally the troop commander's radio set operates in the net of the higher unit while the executive's set controls the troop net.

Before leaving the "means" and proceeding to the "method" let us dwell for a moment on administrative marching. The normal march formation is troop headquarters preceded by the section of intelligence scouts who act as traffic guards, followed by platoons in column in the order prescribed, the rear being brought up by the troop maintenance section, its truck, side cars and crew. Other trucks march normally under squad-



One-half squad Troop G, 6th Cavalry fully equipped. (Front and rear view)

One Platoon of Troop G, 6th Cavalry, on the road

ron or regimental control. Command cars lead their platoon, soloists ride in pairs where practicable, (in echelon where not), side cars move in column. Distances are normally prescribed by higher authority, but it is practicable to march with less than 100 yards between platoons and a bare minimum between cycles depending on the speed and the skill of the drivers. Drivers become skillful at road marching in a remarkably short time and, to digress for a moment, it is a spectacular sight to see a complete motorcycle troop rolling along at forty to forty-five miles an hour as uniform as a pattern on the highway.

Surveillance of the column is obtained by having the motor officer ride at the tail of the column and by the other officers supervising the march from side cars or solo motorcycles.

Halts are made at the end of the first hour and thereafter every two hours, except that a gas halt must be made about every 90 miles due to the limited cruising range of the motorcycles.

With skilled drivers the troop can cruise by itself on a paved highway at 50 miles per hour for limited periods, but as a part of a larger unit 35 miles per hour is definitely a better speed for all concerned.

Tactical Employment

The use made of G Troop depends directly on the use made of the regiment. This regiment's most likely missions are Reconnaissance and Delaying Action, hence this discussion of the troop's employment will center around those two forms of action.

Whatever the mission, let me emphasize here that G Troop should *not* be broken up into small groups attached to other units for use as motorcycle messengers, tempting though such employment may at times appear, especially when the radio goes out and regular messenger service appears to have slowed down.

The motorcycle troop is a combat unit, a fast moving reserve of fire power capable of being moved great distances in an incredibly short time given a favorable road net, and possessed of limited cross country mobility in dry weather on its vehicles. It is the only unit in the mechanized squadron capable of carrying on dismounted combat, without which serious resistance cannot be overcome. It is in effect a horse troop mounted on motorcycles instead of horses, and possesses a great many of its capabilities when dismounted.

The regiment has several options in the execution of a reconnaissance mission for an advancing Corps. Two methods stand out as most feasible. One employs the scout car troops for distant reconnaissance and holds the horse squadron portée in rear moving along the main axis until contact calls for detailed reconnaissance, when it is unloaded and operates in the zone as horse cavalry. The other may be called the "team" method and employs scout car–horse portée teams of varying sizes to gain the required information. What of the motorcycle troop?

Consider the first method. Here G Troop or the bulk of it should be held by the Regimental Commander along the axis with the Command Group until information indicates that scout cars are held up. At this point the troop or part of it should be dispatched to reduce the resistance if required or to punch through a soft spot and relieve the pressure on the beleaguered cars. In most cases this can be done best by dismounted action at a critical point, for which action G Troop is eminently suited.

A variant of this method is to attach a platoon of motorcycles to one or both of the reconnaissance troops retaining a scout car platoon or two for the reserve. This has the advantage of giving the reconnaissance troop some dismounted combat power but it also has the disadvantage of reducing its reconnaissance capabilities by the scout car platoon detached. It is believed that the first employment is preferable as a rule.

Now consider the second or "team" method. Here again G Troop should be the Regimental Commander's

mobile reserve ready to fly to the assistance of a detachment held up. In this form of reconnaissance, however, a motorcycle platoon may prove quite useful to a combined detachment for clearing up local resistance, for maintaining liaison between the scout cars and the portée element of the detachment, and for protecting the horse unit while portée and before it detrucks.

As a reconnaissance agency in itself the motorcycle troop is not believed to be as efficacious as other organizations of the regiment and can be better employed on the missions for which its means suit it. However the use of motorcycles in limited numbers for reconnaissance of trails and secondary roads over which scout cars can not go due to the narrowness of the trails or weakness of bridges and culverts has some merit.

A regimental mission of delay, opens up a wide field for the employment of the motorcycle troop. With antitank guns attached it is an effective unit for the establishment of road blocks. For delay in successive position it can remain on any given position until the last and still get away provided terrain is suitable for the operation of its vehicles. But here again acting under the Regimental Commander as a harassing force against the hostile flanks and rear while other units delay the heads of columns it is believed most valuable. Its great mobility and considerable fire power make it a valuable force if employed in this manner—never forgetting the necessity for reasonably good roads to make this mobility practicable.

For security missions the troop has reasonable capabilities. Its flexibility makes it suitable for furnishing the advance guard, rear guard or flank guard for the regiment when the occasion requires it. On such duty it operates on the same principle as a horse unit performing similar functions for a horse regiment. On terrain where the road net permits the troop is ideal for outpost duty due principally to its road speed, man and fire power, thus saving horse flesh and the more cumbersome mechanized equipment of the regiment.

Summary

To sum up—the motorcycle troop, unique in our army, has been tested for a year. Some of its equipment appears to be adequate, some inadequate. It is basically a body of fire power—fast moving on roads—approaching the mobility of the foot soldier cross country. It replaces nothing, but with possible changes in equipment seems destined to take its own place in *The Combat Team*.

Editor's Note: It is highly probable that the Quarter-ton Trucks now under field service tests soon will replace the tricycle (and motorcycle with side car) in the Motorcycle Troop.

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Motor Equipment of Motorcycle Troop

2½-Ton Cargo Truck; ½-Ton Pick-Up Truck; Scout Car; Motorcycle with Sidecar; and Motorcycle Solo.

"Air Power" for Horse-Mechanized Cavalry

By Lieutenant Elwin T. Knight, 6th Cavalry

THE Cavalry, too, is developing its air power; not aerial warfare, but to speed the work of its Pioneer and Demolition platoons. When the new Horse-Mechanized regiments were formed, the old P & D Section blossomed into a full platoon, but with the same old equipment. Gradually this equipment has been modernized to fit the new tempo and requirements of the regiments.

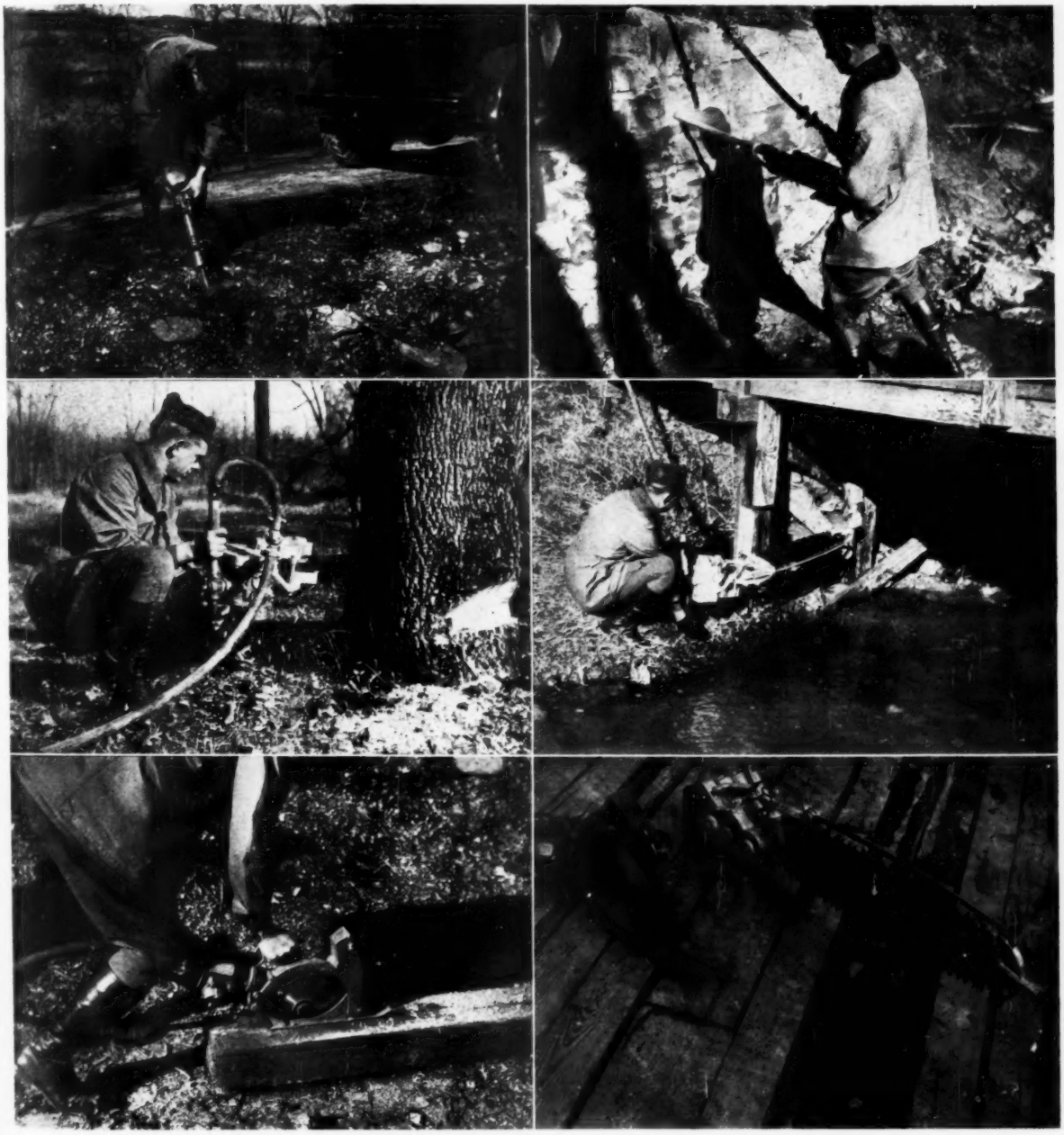
In May of 1940 the P & D Platoon of the Sixth Cavalry took over from an Engineer Battalion an air compressor mounted on a two wheel, narrow tread trailer. This compressor was satisfactory except for two serious drawbacks. Firstly, the center of gravity was considerably above the axle, and, with the narrow tread, gave the trailer a tendency to try to slide along on its back or side rather than on its two wheels. This characteristic illustrated itself literally within two hours after the compressor had been assigned to the Platoon. Secondly, the weight of the compressor was so great that it ruined the rear differential of the two scout cars which alternated in pulling it.

In October of 1940 this old air compressor was taken in and a new one, more suited to the needs of the regiment, was received. This new compressor is a complete unit in itself. Mounted on a Ford cab-over-engine chasis, modified by Marmon-Harrington for four wheel drive and auxiliary transmission, it can go anywhere the scout cars can go.

General Description

The compressor itself is a Sullivan Portable. Powered by a Buda four cylinder engine, with a separate two-

The air compressor and tools



Methods of use

cylinder air pump, the compression cylinders build up and maintain an air pressure in the storage tank of 100 lbs. per square inch. This pressure is maintained automatically with no attention from the operator. The motor automatically speeds up to run the compression cylinders when pressure drops off, and idles down when proper pressure is reached. Safety blow-off valves are set for 110 lbs. per sq. in. The compressor is equipped with a clutch to engage or disengage the air compression cylinders so that the motor may be warmed up properly before the load is thrown in, or so that the load may be taken from the motor if the tools are not in continuous use. There are two reels of hose connected with the storage tank, from which two separate tools may be worked at the same time.

The working tools of the compressor consist of a buster, digger, driller, borer, circular saw, and a large chain saw. These are to be described separately in the following paragraphs.

The buster is a heavy weight breaker, with tools to break concrete, hard pan, and frozen ground. These tools come in various shapes and sizes, such as moil points, chisels, asphalt cutters, etc. In addition there is an attachment to convert this buster into a light weight

pile driver for driving 2″, 2½″, or 3″ thick wood piling. The force of the buster is applied straight down with no rotation.

The digger is a light weight spade used for loosening clay and other hard earth. It is also used to smooth or slope the sides of ditches, trenches, etc. The power of the digger is also applied straight down.

The driller, probably the most useful of all the tools for use on a demolition project, is used for drilling in concrete, masonry, rock, and other such surfaces, for holes in which to place explosive charges. The driller is a two speed, dry type. The power impulse is downward and to the left. That is to say, the drill rotates as it pounds down. In the center of the shank and bit there is an air hole for air blasting the loosened rock fragments from the hole. Shanks come in lengths from two feet to eight feet. Drills come in various sizes up to include one that bores a hole large enough to take a block of TNT without the cover removed. These drills screw onto the shank and are easily detachable. The largest drill will bore a hole through limestone rock at the rate of ½ foot per minute.

The borer is simply a power wood auger, with clockwise boring action and reverse. Bits come in sizes from ¾ inches to 2 inches in diameter and from 12 inches to 30 inches in length. By substituting steel bits this auger will drill through steel. Used primarily for boring holes for internal charges of explosives in trees and wooden bridge pilings, it also may be used to bore holes for pegs in light structures when spikes or nails are not available.

The circular saw is capable of cutting through 4 inch planks. If the plank is too heavy to move conveniently the saw may be "moved through" it. For larger boards and for splitting logs much too large for the saw, a groove 4 inches deep may be made down the length of the plank or log and by using axes as wedges the plank or log may be split fairly evenly.

The large chain saw is 2½ feet long and is capable of cutting down almost any size tree or through any plank. If the tree is too large for it to go straight down, the saw is simply "walked around" the tree until only a small center section remains uncut. The tree may also be "notched" with the saw to control the direction in which it falls.

Wooden bridges may be quickly removed by sawing through stringers and supports. Concrete bridges on log pilings may be destroyed by cutting out the piling supports.

The compressor is so compact, so simple of operation, and its tools so light, that its crew of two men can easily keep two tools working simultaneously. In view of the fact that compression may be built up and maintained while the vehicle is in motion no time is wasted after the project is reached. Use of air power means more work, in less time, and with less labor.

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Scout Cars, ever ready for low flying aircraft

Cavalry in the Army Maneuvers

By Captain Henry M. Zeller, 14th Cavalry

THE experience gained by the 1st Squadron, 14th Cavalry, on the Second Army Maneuvers at Camp McCoy, Wisconsin, last August, was interesting particularly in that it taught us considerable concerning the uses for, and the vicissitudes of, a small cavalry unit attached to larger bodies of troops. The squadron, for the period of the maneuvers, was assigned to the Corps Troops of the VI Corps but in practice was attached to different units of the corps for various combat missions.

The Squadron left Fort Sheridan by rail on August 6, 1940, arriving at Camp McCoy the same day. The period from August 6 to August 18 was devoted to unit training, and the period August 19 to August 26 to three maneuver exercises. We remained at Camp McCoy while the National Guard units were being cleared for their home stations, and then we, ourselves, left for Fort Sheridan on September 3, by rail.

Conclusions

The maneuvers didn't bring out anything entirely new but they did give us several valuable object lessons. In the first place, as to the commander of a cavalry unit, particularly of a small one, he must be forward where he is personally in touch with the situation as it develops. He should personally inspect the disposition of his troops, when there is time for this, such as in the occupation of critical terrain when the enemy is not in immediate contact. He cannot expend valuable time in composing and issuing five paragraph field orders; his orders must be oral or even fragmentary if a situation develops rapidly. Wherever contact with the enemy is imminent, his subordinate commanders should be assembled near him where they become acquainted progressively with the situation, and so that the issuance of orders becomes a matter merely of seconds.

A small body of cavalry attached to an infantry division or larger unit must constantly remember that it is tied to the mission of the unit to which it is attached. It cannot go off on any tangents of its own, but must, often unromantically, avoid involvements at variance with its assigned mission. It must constantly keep the headquarters of the unit to which it is attached informed of its location and local situation. It must do this both for the convenience of the higher headquarters, and also to remind the latter that it is still present for duty, as it is quite possible that a green staff under the stress of battle will completely forget small attached units.

Common sense is demanded in the assignment of missions to cavalry. A small cavalry unit should not be asked, for instance, to seize critical terrain over a wide front, hold it over a considerable period involving loss of sleep for most of the command, and then to go to a further mission involving strenuous effort. If attached cavalry is expected to exert itself prior to battle, and if it is desired to use this cavalry to exploit victory or to cover defeat, then the cavalry should get a rest during battle. Men and horses will stand just so much, and although in case of emergency cavalry may of course be given missions where it will expend itself, this should never be allowed to happen just through ignorance and poor planning.

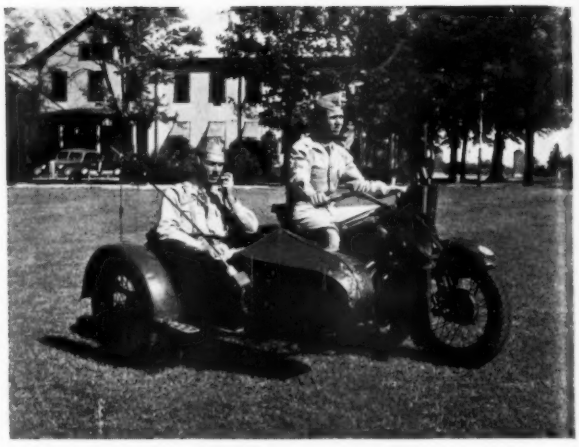
As to communication, we found that there is no true substitute for the messenger, particularly if there is motor transportation available for him. There is apparently something about the country at McCoy which interferes with the operation of radio equipment, and this method of communication proved unsatisfactory throughout the maneuvers. The squadron kept an officer busy constantly maintaining liaison with higher headquarters; and communication with our scout cars was all by motorcycle.

For the period of the maneuvers the squadron borrowed three command cars from the 5th Division. One of these was used as a squadron command and messenger car. This car and a sidecar motorcycle we already had, proved themselves invaluable for communications purposes, both within the squadron and to the rear. The other two borrowed command cars were used to reenforce the scout car section already attached to the squadron from Headquarters Troop, 14th Cavalry, thus forming a platoon of four cars and a solo motorcycle. This platoon proved a great help, for although the scout cars cannot go everywhere across country, they can certainly reconnoiter the roads, and where the squadron was spread over a wide front they were able to cover the gaps and flanks, thus saving the horses which otherwise must have been used on patrols.

During the second exercise we had a motorized infantry company attached to us. This proved a valuable reënforcement, and brought out the fact that where there are any roads at all, motorized infantry often can be used to build up cavalry strength where the situation requires it, for although it does not possess cavalry cross-country mobility, it has plenty of road speed, and can be used for outpost duty, to execute holding attacks, etc. It is not a substitute for cavalry by any means, but it can be very useful to a cavalry commander.

Traffic Control For Administrative Marches

By Captain Kelso G. Clow, 6th Cavalry



Traffic control chief

AMONG the several problems that have been presented to the Sixth Cavalry (Horse and Mechanized), is that of traffic control for the regimental column during administrative marches. The solution to the problem was approached by considering two fundamental questions:

(1) What means are available?

(2) What method shall we adopt?

Consider first the means: We have vehicles; and we have personnel to man the vehicles. The high degree of road mobility and maneuverability of the motorcycle make that vehicle the uncontested choice over the reconnaissance truck, the scout car, the cargo truck and the semi-trailer. The traffic control group, which precedes the regimental column, then, is made up of six solo motorcycles and one motorcycle with side car. The six solo motorcyclists include the four intelligence scouts of the regimental staff section and two solo messengers drafted from the tactical platoons of Headquarters Troop. The motorcycle with side car is driven by the messenger assigned to the staff section. His side car passenger is the traffic control chief. Under the present Tables of Organization, a sergeant bugler is provided, and it has been the practice in the Sixth Cavalry to use him as traffic control chief. Under the new Tables of Organization, no sergeant bugler is provided; further, there is no separate intelligence sergeant provided. It is believed that the new tables should be modified to include an intelligence sergeant (third grade), whose normal duties would be traffic control chief on the march, assistant to the operations sergeant during tactical situations and section sergeant for the staff section.

Besides vehicles and personnel which are closely related because of the individualistic character of the vehicles involved, our means should be considered from the point of view of communications. The three means that have the broadest application are: word of mouth, motorcycle messenger, and radio. Word of mouth is used before the march starts and at halts, when the Regimental Commander gives instructions to the traffic control chief. Motorcycle messengers are used en route, from traffic control group back to the Regimental Commander's car and vice versa. The third means, radio, has not been as satisfactory as the other two. An SCR-195 radio set ("Walkie-Talkie"), was carried in the traffic control chief's side car for the purpose of maintaining voice radio contact with the Regimental Commander by means of another like set installed in the latter's scout car. The results have been erratic—sometimes good, sometimes bad; this particular set is not to be depended upon for inter-vehicular communication. It is believed that the "Type IV-A" radio set, now under development for the Armored Force, would be a suitable and acceptable set for the purpose.

Other means of communication, of limited application, have been used: pre-arranged siren and horn signals and arm signals from front to rear in emergencies.

Now, let us consider the methods.

A few minutes before the hour of departure, the traffic control chief reports to the Regimental Commander, who issues instructions as to the route to be followed, rate of march, halts to be made, destination and any other special instructions he desires. The traffic control chief marks the route on his own map and makes appropriate notes. He then assembles his motorcyclists and transmits the information he has just received.

The traffic control chief rides at the head of the traffic control group, which precedes the head of the regimental column (the Regimental Commander's scout car) by at least three hundred yards. This distance may vary up to three miles, in order to allow sufficient time interval for the chief to confer with the police of cities and towns on the route, to warn them of the approach of the regiment, and to make satisfactory cooperative arrangements with the police with a view to controlling traffic during the passage of the regiment. As the traffic control group moves along, the chief spots solo motorcyclists at the various critical points on the route of march, to protect civilian traffic and to insure the safe passage of the regimental column. Critical points include intersections, narrow bridges and defiles, sharp

corners, railroad crossings, underpasses, road construction and sections of road requiring alternate one-way traffic. The motorcyclist traffic guards posted at critical points also act as route markers for the vehicles in the main column.

A motorcyclist posted at a critical point remains there only until the tail of Headquarters Troop (which is the leading march unit) has cleared his position; he then mounts his vehicle and regains his place in advance of the head of the column as rapidly as he can safely. However, his departure from a critical point is practically coincident with the arrival of the motorcycle traffic control group of the march unit (the troop) next in column; a solo motorcyclist from this group takes his place at the critical point. This system is carried on throughout the column: a motorcyclist posted at a critical point leaves it as soon as the tail of his own troop passes it, and his place is taken by a member of the next succeeding traffic control group.

The above described method of operation has been adopted as standard procedure in the Sixth Cavalry, after many weeks and hundreds of miles of experience. It is a simple method for executing an important job. Men selected for traffic control duty must be alert and careful but bold motorcyclists, endowed with initiative, force, an understanding of why a critical point is critical, and an appreciation of the responsibility of his job.

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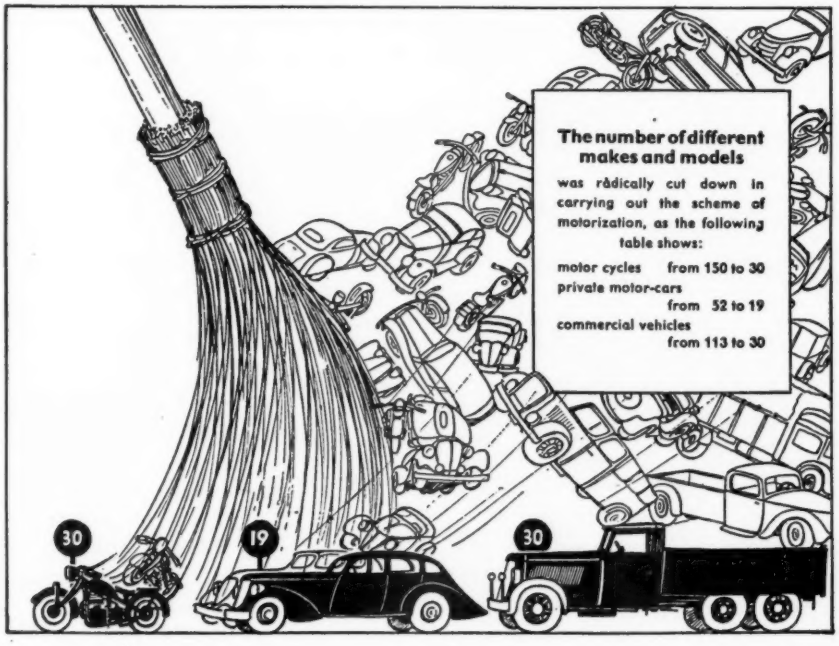
Germany Has Standardized Types of Motor Vehicles


The number of different makes and models
was radically cut down in carrying out the scheme of motorization, as the following table shows:
motor cycles from 150 to 30
private motor-cars from 52 to 19
commercial vehicles from 113 to 30
30
19
30

Views of sub-caliber attachment

Sub-Caliber Mount for 37-MM. Gun

By Lieutenant James R. Roane, 6th Cavalry

IN view of the limited ammunition for 37-mm. firing, and limited range facilities of a small Army Post, a sub-caliber mount for the 37-mm. gun is highly desirable. The thing that we felt was needed was not only a sub-caliber mount that could be used on the 1,000″ range, but more important, one that would actually allow us to simulate 37-mm. firing at moderate field ranges. Our Regimental Commander, Lieutenant Colonel Considine, recommended that the .22 caliber rifle be used for this work. To receive the desired results and to simulate more accurately the firing of the 37-mm., it was essential to have a mount that would allow both horizontal and vertical adjustments. Considering the horizontal and vertical adjustment idea, we constructed a mount that proved very satisfactory.

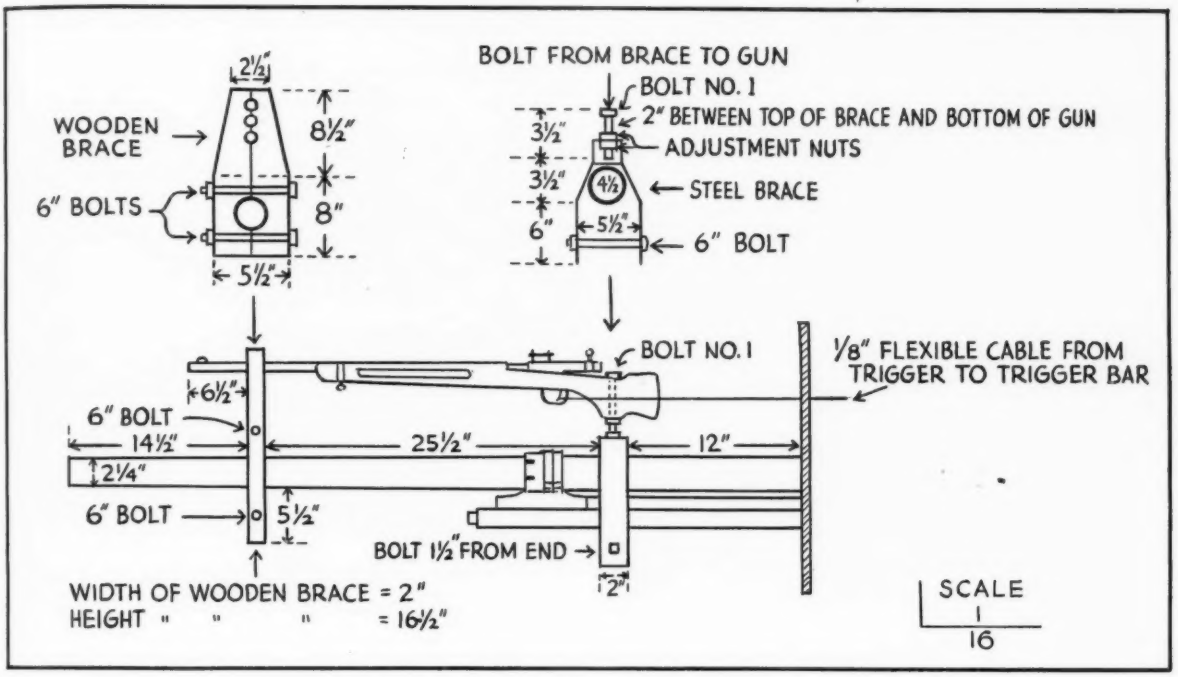
Construction

The accompanying diagram and pictures show the detailed construction of the mount much better than words can describe it, with the exception of one detail. Bolt No. 1, used for vertical and horizontal adjustments, passes through a rectangular slot in the top cross member of the mount. The bolt has adjustable nuts on each side of the cross member. In making vertical adjustments, the lower nut is loosened and by turning the top nut left, depresses the muzzle of the .22. By turning the nut to the right the muzzle is elevated, for horizontal adjustments, the lower is loosened and the bolt slid to the right or left in the slot, as necessary.

When the telescopic sight of the 37-mm. M3A1 is used it is necessary to zero the rifle with the sight. To do this, we targeted the .22 caliber rifle, following the usual procedure as in "sighting in" for ordinary range practice. We then set the telescopic sight on a spotter in the target, and using the adjustment on the sub-caliber mount, aligned the rifle sights on the same spotter.

In a test to determine the accuracy of the .22 caliber and the stability of the sub-caliber mount, we fired 20 rounds in a "3" inch group at 100 yards; 20 rounds in a 3½″ group at 200 yards; and 20 rounds in a 5″ group at 300 yards. In this test we did not change the adjustments after firing the first shot in each group.

After trying a few "dry runs" on moving targets, we found the 37-mm. to be unbalanced due to the fact that the .22 rifle was mounted on the barrel, thus throwing unusual pressure on the elevating mechanism. This caused the gun to be unusually hard to elevate and



Construction of mount

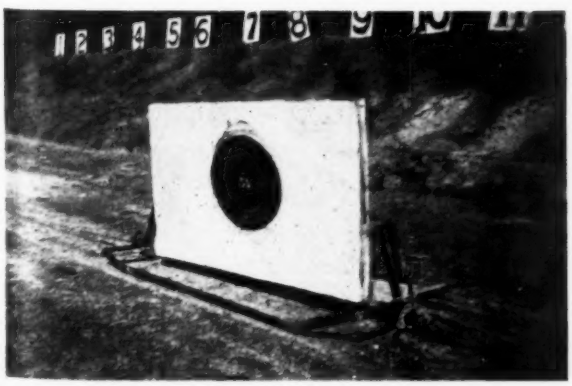
depress; also it caused the traversing mechanism to be sticky. To overcome this, we placed a 13 pound sand bag 12" from breech of the 37-mm. on the recoil guard.

Target

Because of the short distance the target had to travel, we used a small target 3 feet by 4 feet, drawn at 10 miles per hour. By this means we simulated a scout car or tank traveling at approximately 40 miles per hour. The target was constructed in the following manner: for runners, a salvage bed was used, with about one foot on either end turned up 30 degrees; two uprights 12" long, 2" apart welded on the cross member on either end to support the target. For a target, a frame 3 feet by 4 feet covered with target cloth was made, on the bottom of which was nailed a 2" x 4" x 6'. This 2" x 4" x 6' fits into the upright on the runners and keeps the target in position.

Practice

We have endeavored in all our firing of the sub-caliber to practice in the same manner as if we were firing the 37-mm. The crew functions in the same manner,



Target

Sub-caliber practice

using dummy 37-mm. ammunition. The carrier passes shells to the assistant gunner who loads the 37-mm., and calls "Ready" to notify the gunner that his weapon is ready to fire.

In turn the gunner tracks the target during all the loading operations. As soon as the gun is ready to fire and the sights are aligned properly, the gunner presses the trigger actuator firing the .22 and snapping the 37-mm.

The gun commander loads the .22 by operating the bolt as soon as each shot is fired. This procedure follows for each round fired. With the members of the crew alternating positions they learn the duties of all members and how to coördinate the different duties so as to function as an efficient team rather than as individuals.

Whether we are fighting a rapidly retreating force or facing a Blitzkrieg, we undoubtedly need to be proficient in the operation of the 37-mm.; the only way to become proficient is through practice—practice makes perfect. We here at Fort Oglethorpe, the home of the Fighting 6th Cavalry, feel that the sub-caliber is very efficient for training at short ranges, not only that it eliminates the wear on the expensive equipment and the expenditure of the more expensive ammunition. The .22 caliber sub-caliber may be fired 4 days at less expense to the Army than one round of 37-mm. ammunition, .22 ammunition cost 17 cents per 50 rounds, while the 37-mm. ammunition is $131.50 per 50 rounds, or 77 times more expensive than .22 ammunition.

We have adopted the .30 caliber Garand rifle for the sub-caliber. We have not been able to give it a thorough trial, however, it is very accurate up to 1,000 yards.

37-mm. guns, trailed by scout cars

1940 Leadership Test

2d Squadron, 12th Cavalry

By Captain Chandler P. Robbins, 12th Cavalry

"SEMPER PARATUS" was no idle jest when the squadron received word it was to hold the Leadership Test for Small Units this year. The squadron was embroiled in the training of remounts and recruits and the additional task of training three competition platoons loomed large.

However, volunteers were many and the task became more one of weeding them out than of finding them. All lieutenants competed for the platoons, and the men, especially the non-commissioned officers were anxious to have a chance at the competition and its rewards.

In drafting the conditions governing the test every effort was made to require the platoons to function under actual war conditions.

The missions assigned, as well as the situations and conditions presented were normal and logical for Cavalry. Even the terrain and weather favored the Board in its efforts to tax the brain and brawn of a "Soldier or Soldier Saint."

Individual Phase

All reserve and regular officers below the grade of Captain competed in this phase of the test, the three winners being given the three competing platoons from the squadron. Resulting scores showed clearly that all competitors were well qualified. The margin between third and fourth places was only two points.

The actual test was run on November 11, 1940. All contestants drew numbers by lot and were issued the following instructions:

"Considering yourself in enemy territory you will start at the 200 yard firing point following a course marked by white flags. You will travel at the rate of six miles per hour until you arrive at the *Red Flag* on the course. You will then travel ten miles per hour for the remainder of the mounted course.

There are ten jumps on the course, all of which must be taken. There are seven pistol targets, varying in size, representing the enemy. This enemy will be destroyed by firing one shot through each target. You will then return to the starting point, dismount, unsaddle, turn your horse over to your orderly and run to the dismounted pistol course where you will find pistol ammunition and will fire at a pop-bottle until it is broken. You will then proceed to the 1,000 inch range where you will find an M1 rifle and ammunition. Fire this rifle at another pop-bottle. When you break this bottle you will run back to the 200 yard firing point. There a target will be pointed out to you; you will estimate the range, and issue the necessary fire order to your platoon (assuming your platoon is present with you), to open fire upon the enemy. You will then saddle your horse and report to the judges at 200 yard firing point.

PENALTIES: All competitors were credited individually with 500 points. Assessments were made as follows:

1. To forfeit one point for each 10 seconds or fraction over or under time on the mounted phase.

2. To forfeit one point for each target fired at and missed, and ten points for failure to see and fire at any mounted target.

3. Eight minutes are allowed to run from the 200 yard firing point, fire pistol, machine gun, rifle and return to starting point. One point will be deducted for each 15 seconds under time.

4. One point will be deducted for each shot over one, it takes to break the dismounted pistol and rifle targets. Eight points will be deducted for each square missed with the machine gun; one point credit will be given for each square hit.

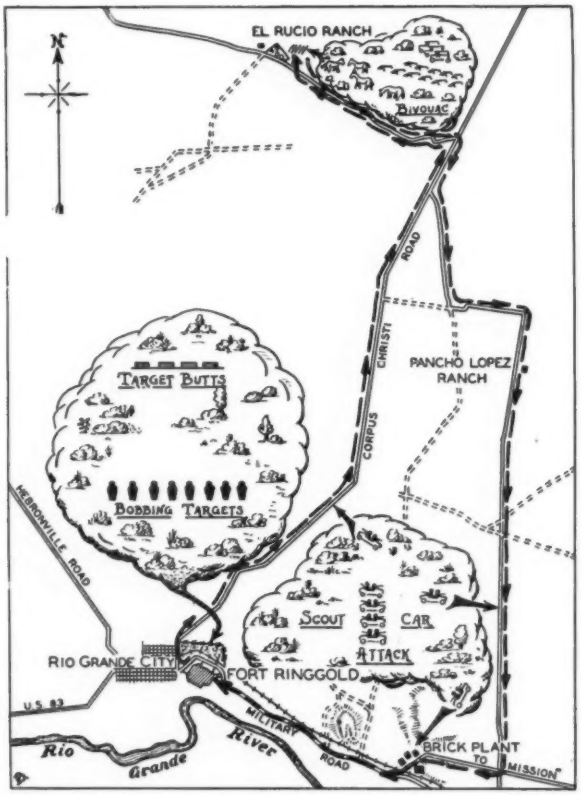
5. One point will be deducted for each 50 yards error in estimating the correct range. Five points will be deducted for failure to issue fire order in proper sequence.

6. Two minutes is allowed for saddling; one point will be credited for each ten seconds under time; ten points will be deducted for failure to saddle properly.

The course is approximately five miles long.

The three Lieutenants with the highest score will be given a platoon to compete in the Cavalry Leadership Test for Small Units. The other Lieutenants will be alternates in the order of ratings in the individual test."

This phase of the test was most interesting in spite of the pithy picture presented by the foregoing discription. The course was tough—as witnessed by the bedraggled condition of the contestants at the finish. A couple of miles of rough brush riding and good stiff obstacles. Well concealed targets at unexpected places and a real work-out on the firing line. Lieutenant Anderson, of Troop "F," with a score of 484 won this phase followed by Lieutenant Lee (473) and Lieutenant Pattie (459) of Troop "E" and "G" respectively. Fourth with a score of (457) was Lieutenant McCroskey who had joined the squadron fresh from Riley a few days before. He was high man on the dismounted phase and would probably have won the event had he not failed to fire on three of the mounted pistol targets. This omission



was entirely excusable since he was going so fast at the time he later confessed—"it was all a blur, sir!"

Many of the contestants were so short of wind when they reached the firing point that they were forced to take a short blow before firing. Hot weather and the unaccustomed foot work were the most common excuses. Pay your money and take your choice. The garrison enjoyed it all.

Leadership Phase

The platoon phase was held on November 23d for Troop "F," November 24th for Troop "G," and November 25th for Troop "E." Platoon leaders drew for the order of starting. Preliminary instructions were issued immediately after this drawing and were as follows:

"1. (a) Approximately 24 hours prior to the test, you will furnish the Board the name and rank of each individual participating in the test together with the number of the horse he is to ride. This test will be conducted under assumed war conditions.

(b) All horses assigned to the platoon will be inspected by the Board 24 hours prior to starting.

(c) Approximately twenty-four hours after the test all horses participating will be inspected by the Board.

(d) Three rounds of .45 caliber ammunition and two loaded M1 clips for each man will be carried in an ammunition box and turned over to the Board at stables. Three clips of .30 caliber blanks will be carried in the belt of each rifle man.

(e) A written warning order accompanied by a suitable marked map, will be issued by the Board approximately twenty-four (24) hours before the test is to commence.

THE BOARD."

On the day before each platoon was to start it was given a map of Fort Ringgold and the following:

Warning Order

"1. Tomorrow, November ———, you will be given a mission which will require you to hold your platoon in readiness at your barracks. This mission will include a march and bivouac.

2. Your horses will be inspected today at 10:00 A.M. at your stables.

3. One day's ration for men and horses will be carried.

4. Hay and drinking water will be delivered to you at your bivouac.

5. No packing of saddles or saddling will be permitted until definite instructions requiring a move are received and your platoon as a whole arrives at stables.

General Tactical Situation

A state of war has existed for several days between two hostile countries separated by the Rio Grande River. Blue—north; Reds—south. Both countries are organized and equipped with modern implements of war. Reds have invaded Blue territory several places from Roma to Laredo. Red troops have also been reported in the vicinity of La Grulla.

THE BOARD."

On November 23, at approximately 1:00 P.M., the Board assembled in the Orderly Room of Troop "F," called the Platoon Leader, issued the following order, and the war was on:

"Red Cavalry estimated to be one regiment camped last night at SALINENO. Ranches were raided last night in the vicinity of ARROYO GRANDE by a force estimated to be the size of one platoon. Small hostile patrols were seen along RIO GRANDE-HEBRONVILLE Road in the vicinity of EL SAUZ at 10:30 this morning. Reliable information indicates a raid is contemplated on EL RUCIO RANCH tonight or early tomorrow morning.

A Blue Regiment of Cavalry, now at TANGUE ALEGRE RANCH, will move South and arrive at EL RUCIO RANCH 2:00 tomorrow. The 12th Cavalry, less 2d Squadron, will arrive at MCALLEN noon today. The 2d Squadron 12th Cavalry will move at 1:00 P.M. today on LA GRULLA." *EXTRACT OF ORDER FROM SQDN C.O., TO C.O., 1ST PLATOON TROOP—*

"March at once to EL RUCIO RANCH via, (see overlay), to protect lives and property of the inhabitants. Rate of march, 6 miles per hour. Remain at EL RUCIO RANCH UNTIL RELIEVED. Our Squadron will move at 1:00 P.M. today on LA GRULLA."

The Platoon Leader called his Platoon Sergeant and with him consulted his map, overlays and order while the Platoon marched to stables and saddled preparatory to moving out.

At 2:00 P.M., after having been inspected by the Board, the Platoon Leader issued his order and the Platoon moved out under the watchful eye of the rest of the Troop who crossed their fingers and wished them luck.

The weather on that first day was hot and sultry. The road was long and rocky and the prospect of a dull 21 mile march was none too cheering and then came the enemy Scout Cars.

The first attack, about 10 miles out, caught the platoon flat-footed because, although they had sent out security patrols, these groups had missed the well concealed cars and the attack came in swiftly and unexpectedly. Dispersion was the only possible defense and the platoon was penalized accordingly.

The second Scout Car ambush occurred on a very narrow, brush enclosed trail, and the rear point gave the platoon ample warning. The result was complete dispersion and rifle fire on the cars.

These attacks slowed the march so much that the platoon arrived at its destination after sundown and their problem was complicated by having to reconnoiter and place their outpost in darkness. This was accomplished and the Board relaxed the imposed war conditions for 1 hour to permit the building of fires to heat coffee and canned rations. This was doubly welcome since evening brought chill winds and the ranch people predicted a "norther" for the next day.

At 1:00 A.M., an alert was sounded and the Platoon Leader was given the following message with overlay:

"A Squadron of Red Cavalry is now in camp at ROMA. Small hostile patrols and Red Scout cars were reported on the west edge of Rio Grande City at 10:00 P.M. last night. Red Troop at LA GRULLA has been destroyed.

Enemy Air & Ground Reconnaissance continue active. 12th Cavalry, less our Squadron, will arrive at Brick Plant at 9:00 A.M. today. Your platoon now relieved from El Rucio Ranch region. Join Squadron at Brick Plant 8:00 A.M. today via the following route.

(SIGNED) CO, 2d Sqdn, 12th Cav."

The resulting night march covered twenty-six and one half miles of the same type of roads and terrain as the previous day. It required the platoon to water and feed men and animals (part of which were on outpost), saddle and move out under "Blackout" conditions.

The gloom was relieved by the appearance of the moon at about 4:00 A.M. Although in its last quarter, it dissipated the darkness and relieved the eye strain of the troopers peering among the shadows in the dense brush.

Smoking was not permitted and extra precautions for maintaining contact coupled with the still-fresh memory of scout car ambushing made for a slow, cautious march.

When the sun rose over the rolling border country, the scout cars struck again but this time warning was ample and the attack was saccessfully met. The platoon continued southward, struck the main highway about two miles east of the Brick Plant with time to spare.

But the fortunes of war frown again—the Brick Plant was occupied not by the squadron but by hostile Scout cars. And so, without further ado, the platoon made a wide and circling movement over exceptionally rough, cactus-infested terrain and attacked the cars from the west.

After very little resistance the enemy waved a white flag and investigation showed they were out of gas and ammunition. However, they proved to be excellent trophies when the Squadron Commander arrived at 8:00 A.M.

The following order was then issued and the platoon moved out on the final 4½ mile leg of the march phase which ended at the east gate of the reservation, near the target range:

"Extract of the Regimental Commander's order follows—

Undetermined number of Red Troops of all arms reported at ROSITA at 7:30 A.M. today, marching toward RIO GRANDE CITY. Our Regiment less your Squadron arrives at Fort Ringgold, 10:00 A.M. today. You will march at once on Fort Ringgold, and delay the advance of Red Troops east of RIO GRANDE CITY. The Squadron C.O. then issued the following order orally to C.O. of the competing Platoon:

"You know the situation. Our Squadron marches at once on FORT RINGGOLD to delay the enemy until the arrival of the Regiment. Lieutenant ————, your platoon will form the advance guard. You will attack the enemy wherever met. Rate of march—5 miles per hour, via. Highway No. 83. I will be at the head of main body. Are there any questions? Move out."

The ensuing combat phase was of necessity, well controlled by the Board. Since the only safe range is a thousand inch one, the combat phase was so cramped and artificial that without this umpire control, the desired picture could not have been presented and danger to adjacent oil well sections would have been inevitable.

The first phase was based on the following brief umpire control:

"When the point of the advance guard arrives inside the east entrance of Reservation it halts under cover, observing what looks to be the point of an advance guard of Red Troops in the vicinity of the Target Range. The Corporal decides to make a mounted attack."

As the point attacked and swept through the targets, it received rifle and LMG fire from the vicinity of the rifle butts. It wheeled by the flank and rejoined the platoon which had moved up into cover. Having ob-

served this action, the platoon leader decided to launch a dismounted attack on the enemy position.

This attack began with the delivery of fire on the scattered targets picked up by the scouts. Other targets (by controlled wires) appeared at various places until the platoon was heavily engaged, whereupon the appearance of another section of enemy targets clearly indicated a withdrawal was essential. During this withdrawal, the combat phase was stopped and the remaining ammunition and score were checked while the platoon moved to stables for the inspection of men, animals and a "show down" of equipment.

Horses were inspected the next day for soundness, and the test was history for Troop "F."

The following day the same procedure was followed for the Troop "G" Platoon. By this time the "norther" had developed and a cold driving rain made the going particularly hard.

This platoon carried simulated land mines which were set out at each halt. They were credited with stopping one scout car attack which, due to a slight error in timing, struck the platoon shortly after it had pulled into a halt and mined the road.

The resulting confusion further threw out the timing and, due to the sparse road net in this country, made the cars late on their second attack. Timely warning on this attempt permitted the platoon to avoid the ambush and proceed without delay.

It arrived at its destination before dark and dispositions for the night were much more quickly and easily made. It had, however, particularly nasty weather to add to its trouble. The "norther" had fully developed and both men and horses suffered from the cold wind and rain. It was "not a fit night out for man or beast."

Yet the platoon made the trip successfully, and about on a par with the previous platoon, until they contacted the scout cars at the Brick Plant. At this point with a little careful reconnaissance they discovered the plight of the enemy and saved the long rough encircling movement.

The rest of their competition was uneventful and the weather improved steadily as they finished.

This excellent weather maintained during the entire period of the "E" Platoon's competition and was no small factor in their eventual success.

They carried hand grenades (simulated) as an additional antimechanization measure and were most successful in their use of them. The first attack, however, caught this platoon from the rear on a section of road hemmed in by a stout wire fence. The flank reconnaissance failed to find the hidden cars which came in between the platoon and its rear point, attacked with all guns firing and literally herded the platoon for a mile when they were able to leave the road and scatter. The next attact was successfully met and the grenades (small sacks of flour) left their marks on the scout cars.

Being speeded up rather than slowed by these attacks, this platoon arrived in bivouac well ahead of sundown and made excellent dispositions for the night.

Their night march was ideal as the moon rode high, the weather was perfect and the only trace of the "norther" of the previous day was the unusual absence of dust.

They also handled the final scout car contact without having to detour and finished at the Brick Plant with men and horses in excellent shape. The finale of the march phase was taken in stride and they did exceptionally well on the combat phase.

Umpiring

The system of umpiring for this competition is worthy of note since it provided a mounted umpire with the platoon at all times during the march and all umpires were present at all halts, contacts with the enemy, and at the bivouac.

This was accomplished as follows: Colonel Palmer and Captain Hasson, the veterinarian, and either Colonel Lafferty or Captain Robbins, rode the local "Jeep," observing the platoon on the march and checking men, horses and tactical dispositions at all halts. They were followed by a horse trailer which carried the horse of either Colonel Lafferty or Captain Robbins, whichever was riding the "Jeep," while the mounted umpire rode with the platoon constantly checking on gaits, the smoothness of changes, the riding of the men, and all the many details covered in the list of penalties.

Horses and riders were changed at the half-way point of each part of the march phase so that each mounted umpire rode equal distances and the same stretch of road with each platoon.

All umpires, of course, were present at all inspections of men and animals—before, during and after the competition.

Comments

There were many interesting phases of this competition. The march phase, consisting of 52 miles, was difficult owing to the rocky roads and heavy brush, yet only three shoes were cast (all were quickly replaced) and no horse suffered seriously from thorn punctures. Men and horses finished strong and were ready for further action as evidenced by the fact that all attended routine drills with their troops the day after finishing. March discipline and gaiting were excellent both day and night.

The methods of handling mechanized attacks varied from the passive—scattering like quail into the brush and presenting an impossible target—to the actual use of simulated land mines and hand grenades as well as rifle and pistol fire. It is believed that both the latter are desirable as the situation permits. Land mines are good when time permits their proper installation. Hand grenades are probably the best all around solution since they can be used by concealed personnel on the ground or thrown from horseback if absolutely necessary. Ample warning is the essence of active defense.

The approach to an occupation of the ranch was worked out differently by each platoon and the methods of covering the road leading in also varied. The "F" Troop platoon made a slow reconnaissance, established march outpost and elected to barricade the road with corral poles covered by rifle fire. The "G" Troop platoon reconnoitered more fully and used their mines on the road while the "E" Troop platoon made a very thorough reconnaissance and swiftly out-posted the road well away from the ranch. All platoons reconnoitered mounted with raised pistols—much to the alarm of the local inhabitants.

All platoons were constantly alert for air observation and attack and the precautions taken by day and night were excellent throughout.

The platoons made a special effort to close all gates along the road to prevent cattle from moving from one ranch to another. A non-commissioned officer was detailed for this purpose and his efforts were duly appreciated by the local ranchers who have great difficulty rounding up stock that wanders in this cactus and brush covered country. Such courtesy and consideration has made the troops welcome wherever they go.

The night march brought out the absolute necessity for special precautions for maintaining contact during darkness and the well known, though often forgotten fact that it is better to slow a little and be sure of your route and location, than to push on blindly. One platoon was "lost" for two hours and as luck would have it, was on the right road, moving in the right direction all the time.

All platoons used the "streamlined pack," written up in the July-August issue of The CAVALRY JOURNAL, and were high in their praise of it. The double blanket reduced sore backs, the grain on the cantle was believed to have contributed to the absence of sore withers and the elimination of the cantle roll made quick mounting and dismounting much easier. The position of the curry comb greatly facilitated its use the many times it was necessary to remove stones from the horses feet on the march. The Board, in its report, recommended the adoption of this pack by the entire Cavalry. No difficulty was experienced in carrying the ration in the saddle bags. In fact they were easily shifted to maintain a balanced load.

The enthusiasm, hard work and high morale exhibited by the competing personnel and their parent organizations during the preliminary training period and the actual tests were a source of pride and satisfaction to the entire command.

The non-commissioned officers were without exception, outstandingly alert, capable and enthusiastic. It is with regret that we pass many of them along as Cadres to new organizations.

Colonel Frederick R. Lafferty, our post and squadron Commander presented the winning "E" Troop platoon with their prize money at a formal ceremony just before the holidays and a Merry Christmas was had by all.

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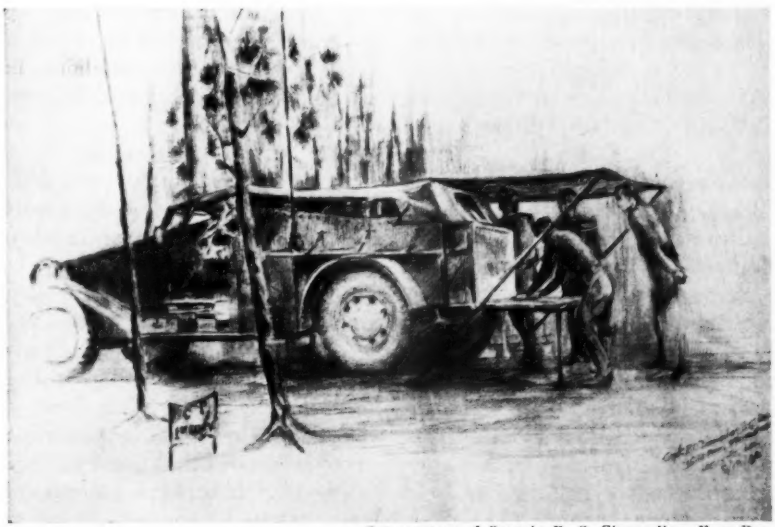


Cut courtesy of Captain R. O. Zimmerling, Engr-Res.

A Cavalry Command Post.

Streamlined Command and Staff Procedure

By Cary Ingram Crockett

"DURING recent years Germany prepared for the next war, France for the last, and Britain and the United States for no war at all." The truth of this statement, which is accredited to Herr Hitler as well as various other personages, can be judged by anyone who keeps in touch with current events.

It is a matter of common knowledge now that, as a result of recent developments in weapons and equipment for fighting, a pronounced change has taken place in both the strategic and tactical aspects of war. The fact may not be so generally known, however, that changes in the physical pattern of war also imply a corresponding moral preparation of the officers and men of the fighting armies—a preparation stimulating them to meet the accelerated tempo of present-day military operations.

Service during maneuvers several years ago as executive officer and part-time commander of a force consisting of a motorized infantry regiment reinforced by a motorized battalion of field artillery, a platoon of modern tanks and a flight of airplanes, quickly opened my eyes to various new features of vital importance. At the conclusion of this experience I wrote the following entries in my notebook:

1. It is not enough for a commander to possess professional ability, thoroughness, accuracy, originality, initiative, quickness of decision, and high moral force —there must also be a mental speeding-up of all officers.
2. Security measures must extend outward, often in all directions, to at least a hundred and fifty miles, defiles being of particular importance.
3. Additional emphasis must be placed on military intelligence.
4. Drastic changes in command and staff procedure are needed to permit celerity of action without undue loss of control.

Later observation during five days of the operations of the 7th Cavalry Brigade, mechanized, also observation abroad, confirmed the above conclusions.

The new methods by which the commander of a swiftly moving force exercises control of his subordinate units preparatory to giving battle and during combat offer a field of study that is of primary interest to all progressive officers and enlisted men.

World War I left as indelible imprints on the minds of officers who took part in it, recollections of written field orders several pages in length which, with the attached annexes, often constituted a large-sized package of closely typed matter. However applicable these voluminous orders and instructions may have been to the set-piece attacks against limited objectives, and to the more or less conventionalized defense of fortified sectors, characteristic of that war, they are entirely unsuited for operations of less restricted type.

Nevertheless, from the mental inheritance of the first World War, and also a desire to give instruction in detail for the benefit of poorly trained organizations, there was until lately a tendency in the American army to follow the old method. For example, in one of the Command and General Staff Extension Courses, now being superseded by a revised course, a brigade attack order appears which takes up several closely printed pages, the paragraphs for a single unit covering over half a page. That this order was for troops only partly trained was the excuse for the length; obviously such an order is now completely outmoded.

Many years ago, the procedure favored at the Fort Leavenworth School for a commander in conveying his will to subordinates, was that he issue initially a complete field order which included missions and instructions for every element of the command. This was then followed by supplementary orders in the form of messages.

Subsequently, the sequence was reversed: the orders to start operations were sent first in message form, the formal field order being prepared later. It is hardly possible that either procedure could be generally followed now, nor in view of the changes in organization and newly devised methods would it be desirable to do so.

In the first place, the present war has proved that poorly trained troops, lacking modern equipment, are unable to confront first-class troops that are properly equipped, and the more inferior troops assembled the greater the massacre. The god of battles is not on the side of the strongest battalions, but evidently favors troops which through timely provision are equipped with modern weapons, and are trained in their use. This war has also proved that the period of time at the disposal of the division commander for the issue of orders and exercise of control, formerly calculated in hours, is now counted only in minutes.

One of the main reasons for the recent change in organization of our regular divisions to the present triangular form is to save time—a factor infinitely more precious now than when Napoleon made the statement: "Ask of me anything but time." New command and staff procedures have been, and are being, developed to meet the requirement for quicker and smoother action at all unit headquarters.

Observation, research, and some practical experience have indicated to me certain measures that appear to have the virtues of commonsense and practicability.

The unit considered for discussion is a triangular division, although the remarks in the main apply to any

command where troops of the various arms are to act in combination.

Under the new divisional organization the main elements, action of which the commander must coördinate and control, are: a reconnaissance unit, the three combat teams, the division artillery and the anti-tank battalion. If the division is to advance rapidly towards an objective it may be possible to transport all elements—except troops of the combat team held tentatively in reserve, and perhaps the administrative echelons of the other two combat teams—in various gasoline-driven vehicles belonging to the division. Speed, heavy striking power, and flexibility of maneuver are the primary characteristics of such a force.

There is, then, to be visualized something similar to a mighty stream composed of several hundred vehicles, with a reconnaissance unit far to the front and observation aviation combing the skies ahead; the current flowing at twenty miles or more per hour. And this stream is to be put in motion, stopped, made to change direction and diverted into various channels, all at the will of the commander as expressed in orders and instructions emanating from a control center usually moving with the current.

In this case, only the commanders of the ground and air reconnaissance units, and the two leading combat teams need receive in message form the initial order covering a change in the tactical situation. The commanders of the artillery, antitank battalion and reserve combat team, also representatives of the remaining elements, are usually close to the division commander, or within easy communication. It is logical to assume that the division commander through the liaison means at his disposal, and periodic reports from each commander, is always informed of the location of each combat element.

Initial field orders are in the form of brief messages. The chief of staff is responsible for insuring that all the next subordinate commanders are informed about the situation, the mission and plan of the division, and the part each unit is to play in its execution. The efficiency of the chief of staff can largely be measured by the extent to which he is able to fulfill this responsibility. Heretofore in our service, the prompt dissemination of information essential for team-work has often been neglected.

Thus unburdened of details, the division commander is free to receive information concerning the capabilities of the enemy and his own force, and to carry on in his mind a running estimate of the situation, based on the information received, which will enable him promptly to meet any important change in the situation with a new decision.

After the shaking-down process incident to a relatively short period of actual practice in the field—during which the personal equations of the several subordinate commanders, also the staff officers, are duly taken into account—the division should be able to function from the command and staff viewpoint as nearly like a well-regulated machine as the frictions inevitable in war situations will permit. In a smoothly running and well-trained organization such as all our divisions should quickly become, decisions of the commander covering tactical operations can be expressed in orders of laconic brevity.

Certainly future orders will be concise. For example, in an advance the order for the commander of the reconnaissance unit might be: "Division advances today towards—in two columns; routes—. Cover line—. Messages to—."

As an extreme example, assuming the commander of the reconnaissance unit to be well-informed, the order might be simply: "Cover line—."

Under the methods which have been outlined, the chief of staff is responsible that all the supplementary information necessary properly to orient the commander of the reconnaissance unit be transmitted to him in due time.

Radio is now provided universally for transmitting messages, but it still has serious limitations, and motorcycles or automotive vehicles of some sort must always be available as an alternative means of communication.

The safest follow-up method after the dispatch by radio of an order of only a few words is for Division to send a staff officer to the subordinate commander concerned to explain the general situation and plan, and interpret the mission of the lower unit in the light of the division commander's viewpoint—provided of course, that the division commander himself is unable to go.

A motorized division preparing for attack would of course seek assembly areas for detrucking that are covered by its advance elements, and are outside the effective range of hostile fire; concealment from hostile aviation by darkness, fog, or woods of course being another important consideration. In such a situation the order sent to the commander of a combat team for development, in its barest form, might be as follows: "See situation map. Division assembles for attack. Orders at crossroads—. —AM"; or if sent by means other than by messenger, the message might read: "Assembly area, combat team A—."

An order in more lengthy form delivered by messenger might include the following: "See situation map. Hostile infantry and artillery occupying—. Hostile mechanized force at—, moving south at —AM. Our reconnaissance detachment covering division along line—. Our antitank battalion moving to—. Division develops for attack. Orders at crossroads—; —. —AM."

It seems hardly necessary to add that unit commanders who are to function successfully under such sketchy orders must possess the qualifications specified in lettered sub-paragraph No. 1 above, to a marked degree. During maneuvers in 1936 the commander of an entrucked infantry battalion supporting a mechanized force received an order by radio of one word: "With-

draw"; and that was all he got. Being ignorant of the situation and plan of his commander, he was in a quandary. But was not this largely his own fault? Should he not—in the absence of information coming from his commander—have displayed initiative by improvising means to inform himself?

If operations are to be conducted under orders condensed as has been shown—all the circumstances indicate that they will be—the commander must foster initiative among subordinates more than ever before. Further, since the commander receives credit for success coming from the initiative of a subordinate, so must he be great enough in character to accept responsibility in case of failure from the same cause. (*Vide* Lee with Longstreet and Stuart at Gettysburg.) How many could pass this test of greatness?

Orders for development of an advancing division might be sent in fragmentary form by motor messenger or radio to the reconnaissance unit and to combat teams A and B; dictated or given orally to the commanders of combat team C, the artillery, and antitank battalion, or to their representatives; and of course by ground-air telephone to the observation aviation. In the above case orders for the division artillery and antitank battalion in message form could be omitted as the commanders are with or near the division commander; both units cover the assembly automatically, and the shift of artillery to division control, if made, is directed subsequently.

Other units of the division, as stated before, conform to the operation in accordance with oral or dictated orders transmitted to the commanders concerned, or their representatives, under the prescribed routine procedure. Information relating to the activities of auxiliary troops and instructions governing supply and evacuation when applicable are made known later to the commanders of combat units concerned.

An assistant G3 charged mainly—or even solely—with seeing that orders, instructions and essential information are duly disseminated to the command would fully justify his existence. It might be well to revive the use of gallopers, moving, however, in motorcycle side-cars instead of on horseback as of old, as one of the means adopted to keep the command properly oriented.

The notes on which this article is based were blocked out in 1939 after several weeks spent in preparing suggestions for revision of the Field Service Regulations. Of course no originality is claimed for anything proposed. Probably the methods touched upon—or others still better—have been developed empirically and already have been put into use by various units.

* * *

Pertinent parts of Lieutenant General Hugh Drum's instructions for the 1940 First Army Maneuvers, given at the opening conference held at Canton, New York on August 7, are quoted as being of special interest in this connection.

Combat decisions and orders in form and substance have passed through two cycles—*first,* the brevity of the expression "follow me"; *second,* the complicated detailed pages of the World War days. The demands of speed and the grasping of fleeting opportunities of present battle tactics require the discard of the latter system while the complexity of handling great masses of human beings and machines with all the supply problems associated therewith make inadmissible in most cases the brevity of the days when the leader actually led his small group. Modern conditions involve not only the complications indicated, but call for large staffs specialized in various phases of operations, supply and logistics. These opposing objectives—speed and brevity on the one hand and the works of large specialized staffs on the other—conflict and, unless commanders take this problem in their own hands, the real objective of a combat unit—successful combat of front line units—will be difficult to achieve. I have devised a solution which I desire all commanders to follow in these exercises as a test. It is based on the following:

All instructions for combat, movements, etc., will be issued in two categories, viz:

(1) *The commander's decision* which will include only such information of the enemy and such statement of the commander's plan and directions to his subordinate commanders as will permit them *to initiate* the operations of their commanders whether in combat or in a movement. All administrative, supply, medical, etc., plans and directions are to be omitted from the commander's decision. In most cases many of the commander's instructions may be indicated on an overlay map.

(2) *All instructions supplementing the foregoing will be issued by staff officers,* within their respective spheres of activity after being coördinated by a chief of staff or executive. These instructions will not be combined in one document but formulated by each staff head and sent direct in that staff head's channel of service. Associated with this system is the necessity for careful consideration by the head staff officer and action by staff officers to keep their commanders informed at all times.

This system, I believe, will give to the combat troops in ample time the information necessary to *initiate operations*—without waiting for the administrative details which are not essential until a later period of the action.

* * *

General Drum's complete instructions were distributed in printed form, down to include companies and like units. Whatever the success of the methods enjoined, it is clear that such methods, or others that are similar, must be employed to make possible the exercise of command during the kaleidoscopic changes in tactical situations which characterize present-day fighting.

What Would You Do?

A VERY bored orderly stood by the roadside in front of St. Luke's Church, holding his own horse and that of Colonel (Old Man) Rivers. A few yards away, Colonel Rivers, for it was indeed he, was busily engaged in one of his favorite pastimes while in the field—that of reading the epitaphs in the churchyard.

Apparently oblivious to the fact that his regiment was about to initiate an attack, he was cackling merrily over a headstone he considered a real diller, when he was interrupted by galloping hoofbeats. A very excited lieutenant drew rein near the colonel's orderly and cried, "Say, where is Colonel Rivers' command post?"

"Just a minute, young man," called the colonel, "I am Colonel Rivers. What's your trouble?"

"I am Lieutenant Spriggin, sir," panted the youth. "The brigade commander sent me to your command post as liaison officer. Its location has not yet been reported, but perhaps I had better go there, if you will tell me where it is."

Colonel Rivers sighed deeply. "Spriggin," he said, "relax. Frankly I don't know where the command post is myself. Not twenty minutes ago I gave orders to organize the regiment for attack on Hill 609, the objective given us by the brigade commander. Having designated the main attack force, the secondary attack force and the reserve, having assigned the supporting fire units and given the coördinating measures and the objectives, what else is there for me to do?"

"I don't know, sir," replied Spriggin honestly. "But I hear a lot of shooting to our north that seems rather close."

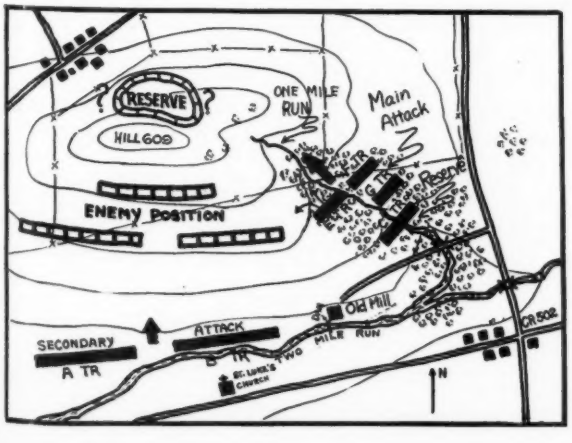
Colonel Rivers took a riding crop and began to draw a sketch in the soft shoulder of the church driveway. "Once the orders are given there's always plenty of time to piddle around in, Spriggin," he said kindly. "I usually leave it to my second-in-command, old 'Egg' Zeck, to spot the CP while I reconnoiter or visit the troops. I know that's not what the book says, but Zeck never misses. Now, look at this sketch," he went on, "that firing you hear is probably the secondary attack of A and B Troops getting started. Zeck may have put the CP near one of these troops because he knows we want to get the secondary attack under way quickly and because he is scared of getting captured by wandering enemy scout cars if he puts it off by itself.

"Or, he may have put his fears behind him and decided that the Old Mill would be a good location. It is right between the secondary attack and the main attack. The latter, you see, is headed up the wooded draw of One Mile Run. The Old Mill would be a handy place from which to control both attacks, as well as the reserve. On the other hand, CR 502 might be a splendid spot because of its accessibility.

"Then there ought to be a good series of points along the One Mile Creek bottom, with the CP moving between the main attack group and the reserve. That location would be near the main attack, which is now our principal concern, and convenient to the reserve. It also secures the command post to some extent. But it is quite a distance from the secondary attack group.

"Spriggin, it's about time I went to my CP. But before we go, tell me, if you were Lieutenant Colonel 'Egg' Zeck and had to select a position for the regimental CP—

WHAT WOULD YOU DO?



SOLUTION

A central location of command posts, somewhat to the rear of assault and reserve elements of the attack force was quite common during the World War. It was a generally acceptable practice because of the static nature of operations and the availability of excellent maps.

If Colonel Rivers' regiment was engaged in World War fighting, a location at the Old Mill would undoubtedly be very satisfactory. But such a central location is quite unsuited to the open warfare expected in modern times. In maneuvers (and in war) these centrally located command posts are invariably at the mercy of wandering hostile scout cars and patrols. Essential security is lacking.

Moreover, the rapidly changing situations demand that some part of the force, preferably the bulk of the force, be under the immediate control of the commander. Also it is essential that the reserve be immediately available, possibly for the commander's personal leadership. It is not always possible to be near

both the bulk of the force and the reserve, but a location near the headquarters of one or both will provide immediate control as well as security.

Another problem of modern war is that of assisting staff officers and messengers to find CP's without the aid of first-class maps. When the CP is located close by a troop or squadron headquarters, it is ordinarily sufficient for the messenger to locate any of the personnel of that particular troop or squadron. They can usually tell him where the headquarters is situated. The troop or squadron being spread out over a relatively wide area, the task of the messenger is simplified.

Colonel Rivers would expect Lieutenant Colonel Zeck to have activated the command post group along the bottom of One Mile Run between the main attack troops and the reserve. The command post would be mobile, progressing forward with the attack by bounds. This location answers the requirements of security and the availability of troops for immediate control. Messenger-time to the secondary attack group is not much greater than it would be from a centrally spotted post.

The changing conditions of open warfare will require a high degree of mobility on the part of the regimental commander and his staff. In the early stages of action the former should visit the secondary attack force and other less important elements of the regiment. The staff should be supervising and checking on the conduct of various groups. In the meantime the command post personnel provide a rendezvous for all persons connected with the control of the regiment and subordinate units; they also maintain the several records connected with the current tactical operation.

A properly located CP will provide the commander with a convenient location from which to control important groups at the critical stages of the action, without having to resort to cumbersome methods.

★ ★ ★

The Rocket-Bomb*

By Major General J. F. C. Fuller, British Army, Retired

On September 19, 1939, we were threatened by a "secret weapon," Hitler himself telling us that: "The moment may come when we shall use a weapon which is not yet known and against which there is no defense."

Now, like a cork, it has bobbed up again, for German military leaders have said that weapons never before used will be employed against Britain.

It should be remembered that the life history of weapons has been fairly constant; for nearly all have emerged out of secrecy. Daily, scores of men are thinking them out; thousands are devised; few are accepted, and then generally most reluctantly; some have changed the course of history, whilst others have disappeared.

Though at first it may seem strange, yet it is logical that throughout history it is siege and not mobile warfare which has stimulated inventive genius. Thus, in the last war, no sooner was the Western Front intrenched than, as if out of a conjurer's hat, appeared first lethal gas and secondly the tank. Nevertheless, though the one surprised us and the other our enemy, the ideas behind these two weapons were nearly as old as war itself.

No, there is precious little new in war. Therefore should Hitler really have a secret weapon up his sleeve, the likelihood is that it is but the development of an old idea. What it is, I cannot say; yet I do know this: Since the ending of the World War the Germans have been experimenting with the oldest of all explosively propelled projectiles—the rocket.

In modern times, the first man to make a true weapon of this piece of fireworks was Major General Sir W. Congreve, who said, about a century ago: "The rocket is, in truth, an arm by which the whole system of military tactics is destined to be changed."

Though the range of Congreve's rocket was no more than 3,000 yards, experts inform us that, should two difficulties be overcome, there is no theoretical reason why a rocket could not be constructed which would travel from Berlin to London, or Berlin to New York.

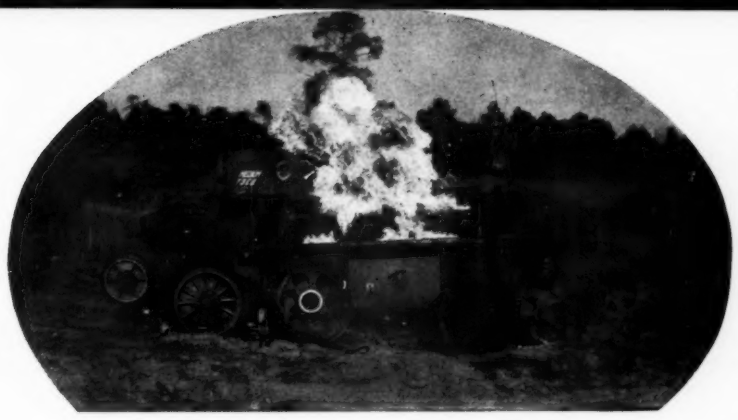
These two difficulties are motive power and maintenance of direction. Should these be solved, then it will become possible to bombard cities by rockets carrying scores of tons of high explosives: manless projectiles which will devastate acres of built-up areas in a second.

Personally, I think that, as a stepping-stone to this war of annihilation, aircraft will be fitted with rocket-bombs, enabling them to bombard a city without penetrating its ground antiaircraft defenses, as formerly walled cities were bombarded by cannon and mortars.

"There is," wrote an American rocketeer five years ago, "no possible doubt that militarists all over the world, with the possible exception of England, are fully alive to the tremendous possibilities of the rocket in modern warfare, and in the next war it will inevitably follow that rocket propulsion will be developed to the fullest extent of its destructive powers, just as happened in the Great War with the airplane."

There is a saving clause, however, and every schoolboy who has played about with fireworks knows it. Rockets have the unpleasant habit of sometimes turning round.

*From *The Gunner*.



Home-made Gas Bombs

By Lieutenant Colonel William F. Heavey, Corps of Engineers

Newspaper reports of the use of the gasoline bomb as a tank discourager in Spain and Finland have brought few details of construction. However, one over-enthusiastic report went so far as to say that it was only necessary to throw the bomb near the engine or exhaust of an overheated tank to set it on fire. While such a method might have been sufficient to deal with old tank types, it would not work on a modern tank.

Here is a gasoline bomb that is easily made and has already proved its worth in tests on a modern tank.

Use at least a quart-size bottle (a smaller size will give you too small a fire). Fill the bottle with a mixture of half gasoline and half oil or creosote. (Gasoline alone flashes too quickly and burns out.)

Tape a good-sized wad of cotton waste on the bottom of the bottle, using narrow tape so as to leave much of the waste exposed. Firmly tie or tape an ordinary engineer fuse-lighter to the side of the bottle. Place the lighter longitudinally so that the flame will strike the cotton waste (Figure 1).

To prime the bomb, the bomber or an assistant pours (from another bottle) enough gasoline to thoroughly saturate the waste on the end of the bottle.

The bomber holds the bottle in his right hand (if he is right-handed) with the neck of the bottle towards him (Figure 2). He pulls the fuse-lighter with his left hand, thus igniting the cotton waste. He promptly throws the bottle at the tank much in the manner of a shot-putter (Figure 3).

Several precautions are advisable:

(1) Don't spill gasoline on the outside of the bottle except on the cotton waste.

(2) Hold the bottle with the cotton waste pointed slightly downward so that gasoline does not run down the outside of the bottle.

(3) Use a tight-fitting cork stopper in the bottle.

(4) Practice throwing a bottle of water without the fuse-lighter, then with a fuse-lighter. After the bomber has acquired confidence and dexterity he can graduate to bottles filled with the gasoline mixture.

Bombers should work in pairs after each has qualified individually. This is necessary because one hit will rarely disable a tank. However, the second bomber should delay hurling his bomb until the first has struck. Observing the result of the first bomb, the second bomber quickly decides whether to build up the fire started by the first one, or to attack a more vulnerable part of the tank. The first bomb may cause a member of the crew to open a flap or even the turret. In this case the second bomber takes advantage of his opportunities.

Blazer or bengal matches or small railroad flares can be tied to the bottle in place of fuse-lighters. However, the fuse-lighters mentioned above have functioned satisfactorily.

Figure 1

Figure 2

Figure 3

Horses in Chemical Warfare*

By Captain Don L. Mace, Veterinary Corps

THE first recorded effort to overcome an enemy by the generation of poisonous and suffocating gases seems to have been in the ancient wars of the Athenians and Spartans, when the Athenians saturated wood with sulphur and pitch and burned this under the walls of the defenders with the hope of choking the enemy and rendering the assault less difficult. Similar uses of toxic gases during the middle ages are reported, which ended in success for the forces employing such methods.

There have always been arguments for and against the use of toxic gases in warfare. The arguments against its use are based upon the viewpoint of its inhumanity. There are several reasons why chemical warfare was first widely advertised as more inhumane and horrible than other forms of warfare, and these reasons may be summed up as follows. The first gas used in the World War was chlorine, one of the suffocant gases, known to have the most agonizing effect of any gas when no protective device is available. Secondly, the English had no masks, no gas proof shelters, nor any paraphernalia later employed to protect against poisonous gas. Consequently, the death rate in the first gas attack at Ypres was exceedingly high. The third great reason was simply propaganda. It was impressed upon everyone that the Germans had no respect for previous agreements made by all nations as one of the rules of warfare (to outlaw the use of gas in warfare), and this propaganda kept up the morale and fighting spirit of the allies, even though it may have led to wild exaggeration.

In the first place, gunshot wounds are usually accompanied by more suffering and mutilation than those which occur from gas. Secondly, the death rate from gas is much lower than that from other forms of warfare, which is illustrated by the fact that less than 2 per cent of the gas casualties in the A.E.F. resulted in death,[4] while 28 per cent of the gunshot wounds proved fatal.[5]

Since gas has certain marked advantages over other weapons, in that it produces a greater number of casualties with longer hospitalization; is applicable to all arms and types of action; and is effective in routing the enemy from areas not vulnerable to gun fire, its use as an effective weapon in future warfare seems assured.

The rôle of the horse in future conflicts is a much discussed question, yet military authorities agree that warfare on difficult terrain requires the use of animal units as important elements in defense, offense, and supply. In spite of the undoubted efficiency of modern automotive equipment, there are conditions in war under which such equipment cannot operate, and animal drawn and pack transportation, along with horse cavalry, appear to be the approved solutions.

*From *The Veterinary Bulletin*, April, 1940.

Sensitivity of Horse to War Gases

Little has been written about the effects of combat gas on the horse as the result of observations made during the World War, hence authentic information is lacking in regard to physiological and pathological action, and treatment. It appears that animals killed or evacuated as a result of gas exposures were not listed in separate categories by the majority of the armies engaged in that war. Therefore, it is our intention to present information on the effects of gases on animals as the result of an extended search of the literature on this subject written during the World War and up to the present time.

The author believes that it is fallacy to assert that the horse possesses a natural immunity to gases, and that such mistaken belief is due to the lack of accurate statistics, the existence of definite idiosyncrasies, the influence of local conditions, and especially the lack of accurate research. Available information derived from such sources leads one to believe that during the World War the mortality following exposure to gas was greater among horses than among men. Higher mortality in the horse can be explained partially by the fact that greater individual and collective protection, and more efficient use of protective devices afforded man far greater security than could be provided for the horse.

Richters,[2] in his book *Animals in Chemical Warfare*, observes that, "The laboratory experiments carried out during the war, as well as experiences in the field compel us to recognize that, although war gas poisonings in the case of horses do not end fatally, so often as in the case of man, nevertheless, man and animal are on the same plane as regards susceptibility to war gases. In fact, as regards certain substances, e. g. mustard gas (yellow cross) the horse, particularly his skin, proves to be more susceptible than man. It is only to a single group of war gases, the lachrymators (tear gas), that the horse has a relatively high degree of immunity."

Irritant Smokes

Irritant smokes are chemical agents which can be disseminated in small solid or liquid particles in air, and which when inspired in very low concentrations, cause sneezing, coughing, lachrymation, or headache, followed by nausea and temporary physical disability.

These agents, such as diphenylchlorarsine (DA) and diphenylaminechlorarsine (DM) are not lethal in field concentrations. They may, however, cause such disability as to require evacuation of men.

War experience indicated that animals are less sensitive to irritant smokes than man, and it can therefore be assumed that suspended particles of these arsenicals in low concentrations do not exert severe irritating action upon

the eyes and respiratory passages of animals. With medium concentrations, the action upon the animal organism is considerable. With the high concentrations, there is a copious flow of tears, a spasmodic cough, nasal discharge, and labored breathing. In 15 to 20 minutes, the intense pain and symptoms begin to subside, and disappear in 1 to 2 hours without leaving permanent injury.[2] Similar observations are reported by Szablowski.[7] There is on file in the technical library at Edgewood Arsenal a report of an experiment performed about 12 years ago, in which a horse was subjected to a very high concentration of DM gas with apparently no injurious effect. While it is not believed that a single test on one horse is sufficient evidence upon which to base the conclusion that DM gas does not affect this animal, it appears possible that it may not become necessary to evacuate or treat horses following exposure to these relatively non-persistent agents, and that they can be put to work almost immediately after exposure.

Lachrymators

Lachrymators are agents which cause an irritation of the conjunctiva and lachrymal apparatus, producing a profuse flow of tears in man.

The principal lachrymators are chloracetophenone and brombenzylcyanide. It is generally believed that the horse is not affected by lachrymators. While many conflicting theories have been advanced by different observers explaining this lack of equine susceptibility, it is the opinion of the author that the intolerable concentration for lachrymator gases is higher for the horse than for man, and that average field concentrations do not have a very noticeable effect upon horses' eyes.

Lung Irritants

Lung irritants are chemical agents which, when inhaled, cause irritation and inflammation of the respiratory tract, and may be followed by asphyxia. Chlorine, chlorpicrin, phosgene, and diphosgene are compounds which illustrate the different types of lung irritants, and their action will be briefly outlined below.

Very reactive substances such as chlorine, or those which have a tendency to hydrolyze rapidly in the presence of moisture, will cause marked injury to the mucous membrane of the upper respiratory passages. Gases, however, which hydrolyze more slowly (phosgene) penetrate the lower respiratory passages rapidly and gradually exert their effect, but cause less damage to the upper parts of the air passages.

Chlorine.—This gas has the molecular formula Cl_2. The common method of preparation is by electrolysis of sodium chloride solution. Chlorine is a heavy, greenish-yellow gas, having a disagreeable odor and a powerful irritating effect upon respiratory passages. The inhalation of chlorine results in damage to the epithelial membrane lining the respiratory tract. The degree of injury depends upon concentration and exposure.

It is easy to protect against chlorine, because of its relatively low toxicity and its great chemical activity. Chlorine in itself has no great use as a toxic agent, its principal importance lying in its employment in the manufacture of

other agents. The discussion as to the effect of chlorine gas on horses will therefore be limited.

When death occurs immediately from high concentrations of chlorine it appears to result from constriction of the bronchioles; no inflammatory reaction is evident in the lower organs of respiration. However, in lethal concentrations where death is delayed, there is a necrosis of the tracheal and bronchial mucosa with congestion and formation of edema in these parts as well as in the lungs. In this case we can expect less edema of the lungs than would occur following intoxication by phosgene, although it develops more readily. Where death is further delayed, bacterial invasion of the damaged tissue occurs through the loss of normal protective epithelium of the upper air passages resulting in secondary bronchitis or pneumonia. Animals poisoned by chlorine develop a very painful cough; pulmonary edema occurs along with other toxic symptoms.[2]

Chlorpicrin.—Chlorpicrin is prepared commercially by action of chlorine on picric acid. Chlorpicrin is considered more persistent and less toxic than phosgene and is classified as a moderately persistent lung irritant. In addition to this property, chlorpicrin causes lachrymation, nausea, and vomiting in man.

Within 2 minutes following exposure of the horse to large doses of chlorpicrin, Soshestvienski[6] observed serious nasal discharge, licking, abundant salivation, and eye irritation evidenced by the horse partly closing his eyes; after 10 minutes there was an acceleration of respiration, coughing, retching, weak heart action, and a slight rise in temperature. With passing of time, these symptoms became more pronounced in severity and the horse died in a state of general weakness, difficult breathing, and weak heart action. In weaker concentrations, symptoms begin to appear in about 10 minutes, which consist of blinking of the eyes, salivation, serous nasal discharge, restlessness, coughing, dyspnea, and accelerated weak heart action; coughing up of foamy liquid, and a slight rise of temperature are also noted, and pulse and respiration are increased. The crisis is generally reached 8 hours after intoxication, followed by a change for the better.

According to Gilenmeister, Heubner, and Underhill, the anatomopathological alterations differ from phosgene intoxications in that the lungs are as a rule less enlarged, but have more atelectatic foci due to accumulation of blood; there is less pronounced edema, and the pathological alterations are located chiefly in the bronchi and bronchioles. Chlorpicrin is a cell poison, and may cause degeneration of organs remote from the place of resorption in the lungs, something which we do not have in intoxication with phosgene. Beyond this, section pathology resembles that of phosgene poisoning.[6]

Phosgene.—Phosgene (Carbonyl chloride) is a chemical agent formed from the combination of carbon monoxide and chlorine. It is a non-persistent lung irritant, more toxic than chlorine, and its physiological action differs in that it affects the lower part of the lungs to a greater extent than the upper respiratory passages. The effect is cumulative and in exposures to low concentrations over extended periods of time it will cause acute pulmonary edema, perhaps by hydrolysis within the lung tissue and the formation of hydrochloric acid.

In animals as well as man,[4] phosgene produces a widespread injury to the parenchyma of the respiratory apparatus, followed by a series of reactive phenomena which might be complicated by specific infection. Damage involves the lining cells of the bronchi, alveolar epithelium, and capillary walls. The early inflammatory reaction in the alveoli consists of an outpouring of fluid in which considerable fibrin may be present, crossing and obstructing the capillaries, and this offers an explanation for the increased resistance in pulmonary circulation, with a consequent dilatation of the right side of the heart in some cases. Inflammatory exudate originating in the bronchioles may at times spread into surrounding alveoli presenting a picture similar to an early bronchopneumonia superimposed upon an intense lung edema.

According to Szablowski,[6] horses poisoned by low concentrations of phosgene develop areas of edema in the lungs, the animals appear listless for 15-18 hours, and the temperature rises as high as 102.2°F., where it may remain for as long as 12 hours, returning to normal in 2 days. The respiratory rate may increase up to 50 per minute, returning to normal in about 2 days. There is an immediate decrease in pulse rate, followed by acceleration within 10 hours, which lasts 2 to 3 hours and recedes to normal during the following 24 hours, when complete recovery occurs. In horses exposed to small concentrations of phosgene the only observable symptoms may consist of slight coughing. In poisoning following large concentrations, horses appear restless and perspire excessively, and there is an abundant seronasal discharge; these symptoms disappear when the animals are removed from the gassed atmosphere. The condition of the animal does not appear bad, and after 6 or more hours have passed, this so-called period of remission is followed rapidly by considerable loss of strength and the respiration increases and maintains a rate above normal. Auscultation reveals evidence of edema in the lung (rales) and there is a dry, painful cough. The pulse is accelerated and weak. The animal may recover as symptoms gradually subside; or death may occur. The cause of death is generally acute edema of the lungs; however, this may be accompanied by a secondary circulatory embarrassment with dilatation of the right heart, bringing death due to circulatory collapse.

Severely gassed patients may suffer from circulatory collapse as shown by the grey pallor, a rapid feeble pulse, and by venous congestion and dilatation of the right heart (never of the left). The circulatory collapse is aided by the following conditions: the local condition of the lungs; by a compression of the capillaries and veins resulting from edema of the lungs; and by the increased viscosity and thrombosis of the blood caused by the transudation of plasma into the lung tissue, thereby reducing the more fluid portion of the circulating blood.

In casualties occurring as a result of lung irritant *poison-*

ings during the World War, venesection was introduced as a measure to relieve circulatory embarrassment that is evidenced most frequently in animals gassed with phosgene. Neither the clinical nor the experimental data are quite conclusive as to its efficiency for saving life, but the balance of evidence is in its favor. Clinical relief is often striking in these cases, especially in the early severe cases with deep blue cyanosis and full pulse (corresponding to acute asphyxial dilatation of the heart).[9] The relief, however, may be only temporary.

Bleeding must not be used when collapse has started, as indicated by poor pulse; or when the condition of the patient is in any way immediately dangerous. Venesection is therefore confined to the pre-edemic stages. It is indicated only within ½ to 1 hour after intoxications with lung irritants. After phosgene intoxication, venesection may prove beneficial up to 4 hours after poisoning.

The beneficial action of venesection may be explained by saying that although the osmotic tension of the blood is not changed, the pressure ratio between the circulation and the tissue is suddenly changed. This leads to a subsequent dilution of the blood with water from the tissues. In untreated gas poisoning, the passage of fluid into the lung takes place gradually in the course of hours, so that no sudden variation of pressure between the blood and tissues occurs. Venesection makes an abrupt and pronounced change of pressure in the opposite direction. It thus not only halts the increasing pulmonary edema and thereby aids the patient in obtaining oxygen from the air, but by the resultant dilution of the blood, it makes a freer circulation possible and thus reduces the anoxaemia of the tissues, and relieves the cardiac embarrassment.

"In intoxications resulting from diphosgene, anatomopathological changes are essentially the same as those caused by phosgene."[6]

Even light physical exertion is harmful to animals gassed with phosgene or other lung irritants, since it places additional work on an already overtaxed heart, and causes a greater demand for oxygen. Exposure to concentrations of phosgene high enough to cause sudden death will rarely occur, unless the animal is in the immediate neighborhood of a gas-shell burst. In such an event, destruction of the respiratory epithelium occurs, and death is caused by asphyxia as a result of rigid contraction of the bronchi.

The pathology of animals gassed by lung irritants varies in intensity, depending on the factor of concentration and time of exposure to the agent. In poisoning with asphyxiants, as well as with other combat gases acting upon the respiratory system, infectious complications may appear, constituting an additional threat to recovery. When lung infections occur, they appear as foci of inflammation in branches of the bronchioles, and may embrace all the lobes of the lung, continuing to develop as the other symptoms subside. Inflammation of the alimentary tract is also a frequent complication.[6]

First aid and treatment applicable to lung irritant gassed animals should consist of some of the following measures: *a.* The first and most important procedure is evacuation to uncontaminated areas. This should be done in such a manner as to avoid undue exertion by removing pack, harness, etc., and evacuating at a slow walk. Warm coverings should be used in cold weather. Because of the delay in the appearance of symptoms, phosgene gassed animals may appear in good condition even though they are seriously injured, a condition which may not be evident until a few hours after gassing. If animals are allowed to exert themselves during this period, recovery may be made more difficult. *b.* Casualties should be kept quiet, supplied with plenty of fresh air and water, kept warm and out of draughts, supplied soft foods, and allowed individual stalls with suitable bedding free of dust. *c.* Among the first of the curative means is an early blood letting as advocated by Szablowski[6]; 0.5 per cent up to 1 per cent weight may be drawn. Venesection is based upon the following theories: Venesection decreases the quantity of blood; it may decrease the possibility of large quantities of blood plasma passing to the lung during the period of edema formation; and avoids the considerable accumulation of the red corpuscles in the vessels of the lungs and of their excessive filling with blood. If, after the first bleeding, the quantity of hemoglobin remains at a constant level, there is then no indication for a repetition of this measure. If the amount of hemoglobin begins to increase, this is an indication of thickening of the blood and venesection should be repeated. A smaller amount should be taken on repeated venesections. *d.* Oxygen may be administered either by mask, by subcutaneous injection, or by intravenous injection as advocated by Richter.[2] *e.* Nonalcoholic stimulants are indicated and expectorants may be used advantageously. *f.* Morphine and like depressants are contra-indicated. *g.* Eye irrigations with boric acid or weak salt solutions should be useful in cases with eye irritation.

Should complications arise, treatment should be modified to cope with individual symptoms as they may arise, since special therapeutic measures may not be applicable to all cases.

Vesicants

Mustard gas, Lewisite, and Ethyldichlorarsine.—These are the principal vesicant war gases at the present time. Mustard gas became a most important chemical warfare agent in the World War due to the difficulty of providing protection against it. The gas mask, when properly used, gives complete protection to the lungs and eyes of man against vesicant agents, which also attack any part of the body with which the liquid or vapor comes in contact.

Mustard gas.—This is a compound of hydrogen, sulfur, and chlorine, having the formula $(CL\ C_2\ H_4)_2\ S$ and known chemically as BB[1] dichlordiethylsulfide. It is not only a highly vesicant substance, but also a powerful lung irritant. Unlike chlorine and phosgene, it does not cause extensive lung edema but attacks the whole respiratory system, producing inflammation of the trachea and bronchi with necrosis of the mucous membranes and development of secondary bronchitis or bronchopneumonia.

This agent has no immediate irritant action on the peripheral nerve endings, consequently there is no pain evident for several hours after exposure.

Mustard action upon the eye.—There are few discussions in the literature concerning mustard injury of the eye of the horse, and the available discussions come mostly from World War experience. Mustard exerts a degenerative and necrotic action on the cornea. Injury to the conjunctiva is shown by the development of a catarrhal seropurulent conjunctivitis, with marked edema of the subconjunctival tissues leading often to entropion or ectropion. Less severe cases run a chronic course with disturbances and reduction in vision. In severe cases cicatrization and vascularization of the cornea takes place slowly with impairment or loss of vision. The affected eye is more susceptible to infection, and in infected cases suppurative panophthalmitis may develop with complete destruction of the eyeball.[4]

Treatment of the eye should consist of long continued irrigation with lukewarm aqueous solutions of sodium bicarbonate, which may aid in removing any uncombined agent which may be present. Irrigations with boric acid solution aid in preventing some of the secondary infections which follow eye burns. Cod liver oil or bland lubricants may be applied to the corner and lids of severely burned eyes. Animals should be kept in dark stalls. Use of 1 per cent creolin ointment about the margin of the eye is useful in keeping flies away.

Mustard action upon the digestive tract.—Through the swallowing of forage and water contaminated with vesicants, corrosive action upon the alimentary mucosa may be produced, varying from a catarrhal inflammation to large areas of eschar formation that may result in rupture. Richters[2] repeatedly observed injuries in animals pastured on mustard poisoned terrain from consuming contaminated forage or water. The entire alimentary tract along which such material passed exhibited inflammation, erosion, and formation of ulcers. Inflammation and swelling of the mucous membrane of the mouth occurred along with the formation of typical mustard vesicles. The injury to the gastrointestinal tract is manifested by a thin, watery blood-tinged diarrhea, and emaciation accompanied by great debility. Treatment of these alimentary effects should follow general symptomatic measures.

Mustard action upon the organs of respiration.—There have been few investigations reported on the action of mustard in the respiratory tract of horses, and these were made largely during the period of the World War. Under field conditions mustard injuries of the respiratory tract and of the eyes of horses will be very rare, yet they may occur as the result of long continued action of mustard vapor.[8] These mustard gas injuries produce an inflammation of the epithelium as shown by the development of a catarrhal, desquamative, membranous, diphtheritic inflammation throughout the extent of the respiratory passages which decreases in intensity downward. Coryza and dyspnea are seen in conjunction with edematous and emphysematous lungs. As a result of secondary infection, a purulent bronchopneumonia may develop. The degree of injury from exposure of the respiratory passages to mustard presents a whole series of intensities, depending upon the size of dose and the duration of action. In the light cases, most likely to be encountered in field concentrations, injury to the respiratory passages and eyes of horses will not be extensive unless the animal remains in very heavy concentrations for long periods of time.[8] Under such conditions, inflammatory alterations of the throat and trachea occur, along with slight inflammatory changes of the conjunctiva. Changes in body temperature are barely noticeable and the heart action remains normal. Hyperemia of mucous membranes, coughing, and a flow of pus from nasal passages may occur. After about a week, recovery may be complete unless complications in the form of an inflammation of the bronchioles takes place, and in such an event the condition may completely change and bronchopneumonia may develop.

There is no special method for the treatment of horses poisoned by mustard through the respiratory tract, and such procedure is purely symptomatic.[8] The nasal passages may be washed with a solution of sodium bicarbonate or boric acid in an effort to remove any residue of mustard which may be present.

Mustard action upon the skin.—The sensitivity of the skin of the horse is about the same as that of man, however, there are portions of his body that probably are more sensitive. These are the cleft of the frog, the coronet, the bulbs of the heels, the posterior portion of the pastern, the axillae, the inside of the thigh, the sheath, the perineum, the genital organs, and other portions denuded of hair. Often permanent injury is a result of secondary infection invading mustard burned areas on the hoof or fetlock. The absence of blister formation on the skin of the horse can be attributed to the absence of a true corium, which forms the bottom part of the sac of the blister. Instead of a localized collection of watery fluid, there is a general diffusion into the tissues of fluid exudate which is one product of inflammation (edema). Ten to 12 hours following the application of mustard gas to the skin of the horse, the hair becomes roughened and the skin erythematous. This is followed by extensive edema around the area of application, which subsides only after several days, and is followed by sloughing of large areas of tissue. Here again the intensity depends upon concentration and time of exposure to either the liquid or the vapor.

Experiments carried out in the United States[4] list the pathological gross appearances of mustard burns upon the skin of the horse as follows: A few hours after exposure, a soft edematous area develops, which is slightly more extensive than the area of application. The extent of the edema varies with the site of application, being greater in the loose skin over the shoulders than upon the back or rump. In about 2 days the swelling begins to subside, and the area then differs little in appearance from adjacent normal skin, except that it is slightly smoother, more glistening, and, in certain cases, a shade darker. Superficial induration persists which upon palpation conveys

the sensation of a disk or plaque of cardboard inclosed in the skin. After a week or 10 days, a scaly desquamation is observed at the margin of the indurated area, which in the course of a week becomes sharply defined. The central plaque, composed of dead mummified tissue, becomes sequestrated from the underlying tissue, first at the margin, then eventually over the entire area until it is finally cast off completely. The necrosis of the epidermis takes place very gradually by a process of mummification in which there is no dislocation of the individual cells. Even after several weeks the basal cells are not disintegrated and their original nuclei are still recognizable as clear, oval spaces. A clumping and concentration of pigment occurs. Reparatory processes begin toward the end of the first week by an intrusion of a flat togue of regenerating epithelium between the superficial zone of necrosis and the underlying healthy tissue. The sheaths of the hair follicle play an active rôle in the regeneration, the cells proliferating and establishing connections with the epithelial processes growing in from the healthy margin. The new epidermis is at first pigment-free and contains many atypical cells.

A very slow rate of healing is characteristic of mustard gas injuries and first aid treatment should be employed to shorten the healing time. The success of such treatment depends upon the speed with which it is used after exposure, the best method being one which can be applied easily and quickly, since such measures will not prevent injury if attempted later than 10 minutes after contact with mustard. The longer the treatment is delayed, the worse the injury will be.

When contaminated animals have to be treated, the attendants must wear respirators and protective clothing. The tail should be secured by tying or holding, and the saddlery and harness, which is probably contaminated, should be removed. When contamination is widespread and is not accurately defined, the animal should be completely and vigorously scrubbed with soap and water. Warm water, soda, and soft soap are usually convenient and are satisfactory. Plenty of water should be used and the washing continued for 20 minutes. Weak solutions of chloride of lime are reported valuable for rinsing, and potassium permanganate solutions are somewhat effective in neutralizing mustard gas on contaminated animals by oxidation. The skin should be thoroughly scrubbed with a paste made of freshly prepared bleaching powder and water, care being taken to avoid the eyes, nostrils, and lips. Bleach-paste is irritant, and should not be left on the animals longer than 5 minutes; it can be removed by flushing with water. Weaker solutions may be applied for longer periods.[3]

Where contamination is local and clearly defined, the visible drops should be removed mechanically with cotton, wool, waste, or rags, care being taken not to spread the contamination to the surrounding parts. Destroy immediately by burning any material used in mechanical removal of the agent. In some cases it may be advantageous to swab these areas with solvents such as gasoline or kerosene. It must be remembered that the agent is merely diluted with these solvents and is not destroyed, and that care should therefore be taken not to spread the contamination to surrounding parts when swabbing with solvents. Neutralization of the contaminant should be performed with the same agents as listed above.

Treatment of gas cauterized areas to prevent secondary infection can be accomplished with moist Dakin's solution packs. Zinc paste or petrolatum may be used about the margin of wounds to prevent blistering from exudates.

Lewisite.—This was first produced in the United States, but not in time to be used in the World War, as the first shipment was made to France at about the time the Armistice was signed. Lewisite lesions are more severe than those from mustard, and the burns are immediately painful. In addition, there are systemic effects from absorption of arsenic. Because of the powerful vesicant action and systemic effect, this gas was termed "The Dew of Death." In the presence of moisture lewisite hydrolyzes to form a non-volatile oxide. This one great disadvantage leads to the belief that it will not be used extensively in coming wars.

Ethyldichlorarsine.—While this is less vesicant than mustard and lewisite, it is stable to hydrolysis, and is less persistent than mustard gas.

Little experimental work has been done to determine the effects of lewisite and ethyldichlorarsine upon the horse.

Phosphorus.—When animals are burned by particles of phosphorus the first thing which should be attempted is to exclude air from the affected parts. Such temporary measures include the application of mud or water, followed preferably by 2-5 per cent copper sulfate solution, which coats over particles of phosphorus and prevents their burning action until the particles can be manually removed.

Hydrocyanic acid and carbon monoxide.—These have not been used extensively as war gases. Carbon monoxide may be formed due to shell explosions; however, no records seem to be available that show any extensive carbon monoxide casualties to horses in the World War.

Protection

In affording individual protection to horses, attention has been directed mostly to the lungs and hoofs. During the World War the Americans developed horse gas masks that gave some lung protection. Horse boots were also devised and used during the World War to protect the hoof and lower leg. However, neither mask nor boots were considered highly satisfactory. Work is now being conducted on the development of a more satisfactory horse mask and a more desirable method of protection for the hoof and lower leg.

Consideration should also be given to the development of preventive measures which will lessen casualties among groups of animals held in recently contaminated areas, or in areas of tactical importance that are likely to become contaminated with chemical warfare agents.

Stables and veterinary hospitals should be placed a sufficient distance from the front lines to eliminate as far as possible exposure to gas attacks. Locations for stables, etc., should be carefully selected so as to avoid small valleys and ravines where high concentrations of gases are likely to occur. Locations near roads and strategic points would likely prove hazardous, since they are likely targets for gas and high explosive shell.

Buildings in which animals are sheltered should have holes and cracks sealed; mud and grass may be used as sealing materials to cut down drafts and prevent seepage of gas from the outside air. Windows and doors should be provided with curtains or blankets, which, in addition, may be soaked in gas-neutralizing solutions of hexamethylenetetramine, or sodiumthiosulfate solution. This type of shelter can be used as a non-ventilated temporary gas shelter and would probably afford partial protection from persistent gases and good protection from non-persistent gases.

Animals should be prevented from pasturing in localities or drinking from water holes, trenches, or shell craters in areas which have recently been contaminated with gas. It can not always be determined by sight or smell whether suspected water and forage is contaminated with gas. Water may sometimes have a film of mustard gas upon its upper surface which can be detected by sight or smell. In case plants and grasses have been contaminated by mustard gas, lewisite, chlorine, or phosgene, this condition might be recognized by a peripheral withering of the foliage or by drying of the shoots.

It is the author's belief that forage and water moderately or heavily contaminated previously by vesicant gases or irritant smokes should not be consumed by the horse. British and Roumanian authorities apparently support the views of Richters,[2] who contends that oats contaminated by mustard gas can be made fit for consumption by washing thoroughly with hot water; and that hay, after mild exposure to mustard vapor, can be decontaminated if it is exposed in thin layers to the action of the sun and aired thoroughly by turning frequently for at least 1 day. This same procedure should be satisfactory on forage following exposure to field concentrations of chlorine, phosgene, and diphosgene. Forage contaminated with chlorpicrin can be decontaminated by exposure to air, but chlorpicrin is stable to heat and hydrolysis. Forage contaminated with lewisite, diphenylaminchlorarsine, and diphenylchlorarsine should be destroyed, since it cannot be decontaminated by exposure to air or water. Forage is best protected by impervious coverings or by storage in air-tight shelters when in areas likely to be contaminated by gas. In contaminated areas water should be withheld from animals until suitable tests have demonstrated the absence of injurious agents. Water in large running streams, deep wells, or large lakes where the factor of dilution is great, can usually be regarded as non-toxic.

Summary

A general summary of available information in regard to the horse in chemical warfare has been presented, with special emphasis on the pathological action of chemical warfare agents, and on the prevention and treatment of gas casualties. It should be emphasized that there is a definite paucity of experimental data on these subjects in available literature relating to the horse. What information is available comes from foreign experiments. Since it appears that the horse shall play his rôle in coming wars, it seems desirable that experiments to determine accurate war-gas sensitivities on the horse be carried out. Such information would aid substantially in producing suitable individual and collective war gas protection for these animals.

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Smoke!

Unit Training Activities

Fifth Cavalry—Fort Clark, Texas

COLONEL HENRY J. M. SMITH, *Commanding*

The training of the 5th Cavalry for the period November 1 to December 21, was a continuation of training conducted in October and emphasis was placed on the training of individuals and small units, both mounted and dismounted. In addition, all supplementary firing was completed and the special troops practiced long range, moving target firing with the heavier calibered weapons. Squad combat problems were fired during this period.

Headquarters and Headquarters and Service Troop stressed the training of the Transportation, Communications and Scout Car Platoons. Two command post exercises were held with installations at reduced distances, the second of which included contact with aviation. All personnel habitually riding with the trains were given instruction in the use of the train defense weapons.

Major Hugh T. F. Hoffman was designated officer in charge of the 5th Cavalry Detachment which participated in the Armistice Day International Exposition at Eagle Pass Texas. The detachment consisted of the 5th Cavalry Band, Scout Car Platoon, First Platoon Troop "E" portée Cavalry and the Maintenance Truck.

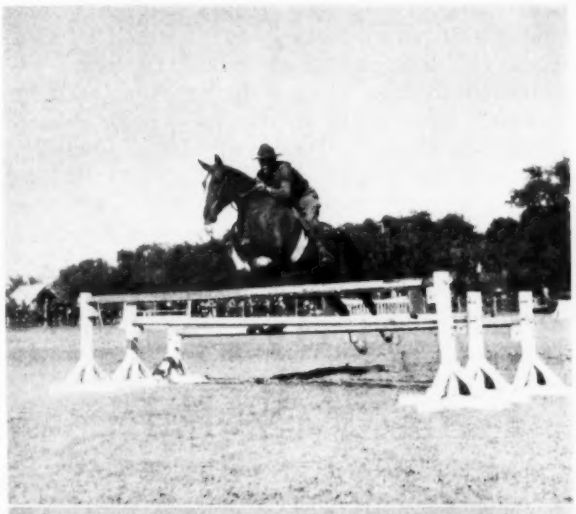
A horse show was held at Fort Clark, November 16. Following is a list of events:

1. Green Polo Ponies.
2. Recruit Horsemanship.
3. Open Polo Class.
4. Junior Officers' Jumping.
5. Recruit Jumping.
6. Novice Jumping.
7. Officers Open Jumping.
8. Bull Durham Race.
9. Riduculous Entry.

Pictures are included of Recruit Jumpers and Ridiculous Entries.

During the month of November the Post Quartermaster received 240 remounts from the depot at Fort Reno, Oklahoma, 228 of these animals were assigned to the 5th Cavalry. It is expected that the 5th Cavalry will receive 600 more remounts which will be shipped to Fort Clark early in January.

Although the 5th Cavalry is not a portée Regiment, quite a lot of time is spent in accustoming the animals to load and unload from the trailers. Three trailers are available and each troop is given an afternoon at intervals for this training. The afternoons of the period November 18 to 29 were used in this manner.



Recruit jumper and comic entries ⟶

Squad combat problems were conducted during the period November 18 to 28. These exercises proved to be splendid training for squad leaders, many of them having had limited service, at the time.

The personnel of Special Weapons Troop and Headquarters and Service Troop fired the Caliber .50 machine gun at moving targets at 600 and 1,200 yard ranges. This firing was done on Postell's Ranch approximately 20 miles North of the Post, since the Fort Clark range is not suitable for this type of firing. 91 men from Special Weapons Troop and 27 men from Hq. and Serv. Troop fired the course.

During the latter part of November and early part of December several training films were shown to the Regiment. Due to the limited capacity of the War Department theater, squadrons saw the films on alternate afternoons. The following films were shown:

Infantry Close Order Drill.
First Aid.
Motor Maintenance.
Map Reading.
Machine Guns in the Defense and in the Attack.
Chemical Warfare.

On November 18 all organizations of the 5th Cavalry started dismounted training under Infantry drill regulations. Prior to this date troop officers and non-commissioned officers were given instruction in the new drill in troop schools.

Pictured below is the Officers' equitation class which commenced on Monday, December 2. The class is composed of all officers of the 5th Cavalry who are not graduates of the nine months' course at the Cavalry School.

An excellent and very useful outside riding hall has recently been completed. The floor of the hall consists of 3 inches of caliche evenly spread; over the caliche was placed a two inch layer of sawdust, shavings and tanbark. This layer of tanbark was covered with 3 inches of sand.

Due to the increase in demand for Regular Army regiments to furnish cadres for newly activated units the 5th Cavalry has recently organized many special schools within the Regiment. The Commanding Officer, Troop "B" is conducting a school for Bakers and Cooks. Approximately twenty extra cooks are being trained to take their places on outgoing cadres or to take the places of experienced personnel which will be sent out in the cadres.

A school for motorcyclists is running at the present time. Running concurrently with the motorcyclists school is a school for Scout Car Commanders and Scout Car Drivers. Twenty-seven motorcyclists from the 5th Cavalry have been designated as parts of cadres to activate the Division Antitank Troop, Division Reconnaissance Squadron and Brigade Weapons Troop.

There is not a definite date yet set for activation of the above mentioned organizations but it is thought that it will be done very shortly.

A Regimental Intelligence School was conducted during the period November 12 to December 12. The class was composed of the Intelligence Section, Headquarters and Service Troop and 3 specially selected men from each troop. Scouting and Patrolling, Map Reading, Sketching, Use of Compass, Reconnaissance and Message Writing constituted the major part of the instruction given. The instruction was about evenly divided between class room work and outside practical exercises.

The 5th Cavalry received its first group of recruits coming into the Army under the Selective Service Act, on Thursday, November 28th. There were 102 men in this group, 32 were classified for the Medical Detachment, 5th Cavalry, and the remaining 70 were distributed among the line organizations according to their respective desires. Their 6 week recruit training began the following Monday. The men appear to be of high type and are entering into their training with high morale.

Division Commander's Inspection

Major General Robert C. Richardson, Jr., U.S.A.,

Outside riding hall

Commanding the 1st Cavalry Division, inspected elements of the 1st Cavalry Brigade at Fort Clark, Texas, on December 9. The inspection started with a review in full field equipment. Following the review, the motor transportation was inspected. While inspection of the motors was taking place, each troop moved to their respective drill areas where General Richardson inspected equitation, jumping, close and extended order drill.

Two rifle platoons (reinforced) were chosen at random by the Division Commander. One platoon was given a defensive problem and the other an offensive problem. The Division Commander observed the conduct of each. Concurrent with the platoon problems, the Brigade, Regimental and Squadron Command Posts were set up. A test was run as to the time required to encode, transmit and decode a message from top to bottom. The procedure was then reversed and timed from bottom to top.

The Recruit Detachment was inspected at both mounted and dismounted drill.

Two squad combat problems were conducted immediately after noon. The squads were chosen by the Division Commander during the morning inspection. Following these exercises light, heavy and Caliber .50 machine gun platoons were fired on the 1,000 inch range.

Following the firing, General Richardson conducted a detailed inspection of troops, under arms, dismounted; the barracks and stables.

The following morning the Division Commander departed to the lower Rio Grande Valley to inspect the 12th Cavalry.

* * *

Troop "A," 5th Cavalry, entrucked on the morning of November 12, for a march to Camp Bowie, Brownwood, Texas. Troop "A" was sent to Camp Bowie for duty in connection with the receipt and storage of supplies pending completion of the Camp. The troop rejoined the Regiment on December 18th.

Lieutenant Colonel Tom S. Brand, Inspector General's Department, 8th Corps Area, inspected the Regiment November 13 and 14.

A Message Center School composed of the Message Center Section, Communications Platoon, Headquarters and Service Troop plus two students per troop was commenced on November 18. Special emphasis is being placed on ciphering, deciphering, general message procedure, files and codes.

Platoon Tests

In compliance with T.M. No. 62, 1st Cavalry Division and T.M. No. 1, 1st Cavalry Brigade, c.s., platoon tests were conducted by Squadron Commanders on December 18, 19, and 20. The tests were divided into mounted and dismounted phases. All Lieutenants were required to command platoons during the tests regardless of their present assignment.

The mounted phase covered the following:

Close order drill.
Extended order drill.
Patrol formations.
Advance guard.
Equitation and Jumping.

The dismounted phase covered:

Close order drill.
Combat orders.
Combat formations.
Principles of musketry.
First Aid and Hygiene.

* * *

New Mortar Hangers Developed

When the 81-mm. Mortar was recently included as armament for Cavalry Regiments there were no available hangers for the weapon. *First Lieutenant Irwin A. Edwards, 5th Cavalry, Commanding Special Weapons Troop, and Sergeant Joe Clyburn* experimented with hangers to be placed on the Phillips Pack Saddle to carry the weapon.

Lieutenant Edwards has produced a very serviceable set of hangers. Following are his comments and the specifications of the hangers using pictures for explanation purposes:

"The hangers for the 81-mm. Mortar provide a mounting for the tube on the near side of the pack, the bipod on the off side and the base plate on top with the rear to the left. This disposition aids in counter-balancing the three pound difference in weight between tube and bipod. The base cap of the tube is mounted forward with the balance point slightly in rear of the front retainer. The weight of the base plate is equally distributed on the longitudinal lines of the pack, and the bipod is mounted with the clamp and traversing mechanism forward. While this distribution places the load a bit high most of the weight is well forward thereby freeing the haunches and allowing the horse a greater and faster mobility which affects any tendency for him to become over balanced.

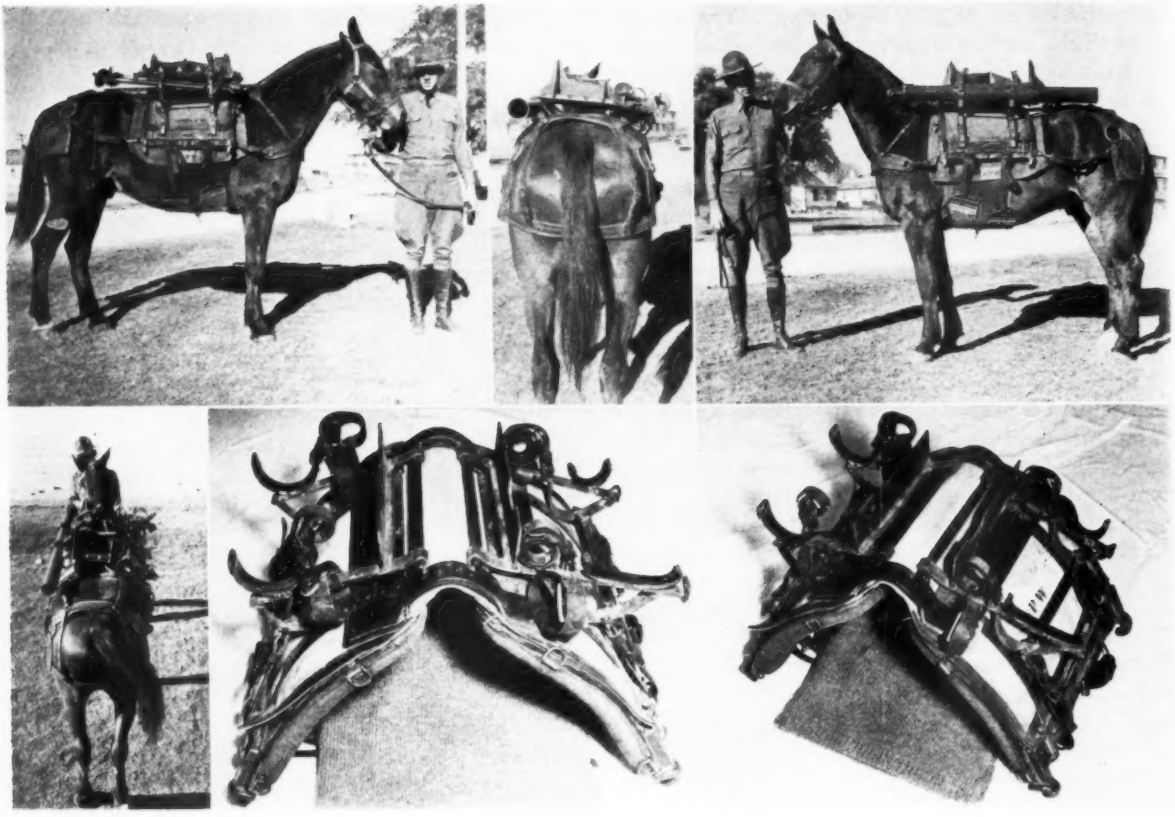
The Mortar Platoon has been able to travel over rough terrain and through heavy brush at the same gaits as the two .50 cal. MG Platoons of the Special Weapons Troop. At the end of a twenty-two mile march at an average speed of 7.5 miles per hour the pack horses transporting the Mortar were in excellent condition and displayed no lameness or soreness in their backs.

So far by all the tests that have been given, the Mortar pack rides as well as the .50 cal. MG and is a little lighter in weight.

The hangers are spot welded which makes them a great deal tougher and more serviceable than they would be if rivets were used."

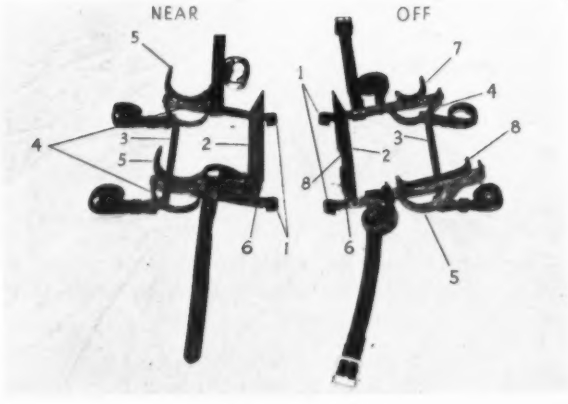
Dimensions

All material used excepting the base retainer is 1"x ¼" strap iron.



Near side Hanger
Weight 8.5 lbs.

1. Hanger Bars (overall length)	13″
2. Top Cross Piece (overall length) .	11″
3. Bottom Cross Piece (overall length)	11″
4. Hanger Leg (overall length)	8¾″
5. Spread of hanger leg	5″
Height of hanger leg	3″
6. Tube Retainers (overall length) ..	7¾″
Spread of Tube Retainer	4″
7. Base Plate Retainer	3″x12¾″x¼″

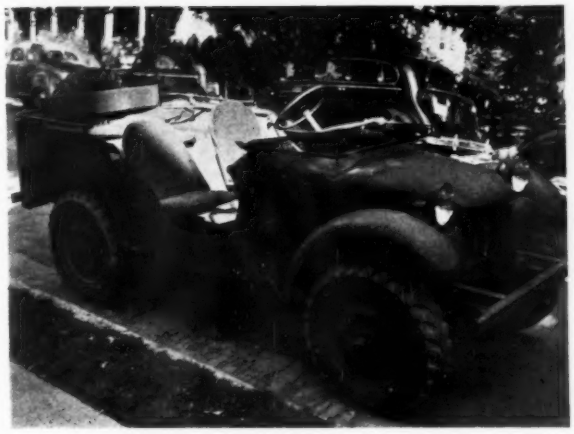


Details of hangers

DIMENSIONS
Off side Hanger

1. Hanger Bars (overall length)	13″
2. Top Cross Piece (overall length) ..	11″
3. Bottom Cross Piece (overall length)	11″
4. Front Hanger leg (overall length) ..	8⅝″
Spread	5¼″
Height	2-9/16″
5. Rear Hanger leg (overall length) ..	12-7/8″
Spread	8¼″
Height	3-7/8″
6. Base Plate Retainer	12¾″x3″x¼″
A notch ½″ deep x 2″ long and 9″ from the front of the retainer is made as recess for the base plate link.	
7. Front Bipod retainer (overall length)	4½″
Spread	2½″
8. Rear Bipod retainer (overall length)	7½″
Spread	6″

EDITOR'S NOTE: *This article was set in print before The Cavalry Board approved a similar hanger. There is little change, however, except that the tube is carried as a top load and side loads tower. The Pilot model is now under test and probably will be in production at an early date. We congratulate the 5th Cavalry on its initiative and ingenuity.*



The Bantam

Sixth Cavalry—(Horse-Mechanized) Fort Oglethorpe, Ga.

LIEUTENANT COLONEL JOHN A. CONSIDINE, *Commanding*

The Sixth Cavalry was invited to Atlanta, Georgia, to participate in their Armistice Day Parade. Leaving Fort Oglethorpe the Saturday before Armistice Day, the Sixth marched to Atlanta in less than six hours. The practice polo field at Fort McPherson proved to be a very fine camping ground, even though it rained intermittently from soon after our arrival until after we had returned to Fort Oglethorpe. On Armistice Day Lieutenant Colonel Considine led the Sixth, parading down Peachtree Street. The holiday crowds were very interested in seeing a Cavalry regiment completely on wheels. Everyone was most impressed with the portée equipment and the complete organization and equipment carried in each trailer. The motorcycles and scout cars added to the color of the Sixth Cavalry on parade.

After the parade the regiment turned towards Fort Oglethorpe, arriving there at four o'clock the same afternoon. For the newcomers in the regiment the whole trip was very interesting and instructive, but for the majority of the members of the regiment it was hardly more than another road march.

Due to the intensive building program at Camp Peay, Tenn., Troop E was ordered up there for military police and administration of the camp. Captain William O. Heacock, Commanding, with 1st Lieutenant Robert E. Snelling and 2nd Lieutenants Howard M. Trapp, James W. Cooke, Roger F. Starr and Robert L. Taylor and 127 men with all their scout cars and much of the rest of the troop's equipment arrived at Camp Peay on November 18. Troop training and troop schools are maintained at high standards despite the demands of the troop's new duties.

Lieutenant Colonel Gersum Cronander reported for duty with the Sixth Cavalry on November 22. Five days later he took over command of Camp Peay. At this writing all Sixth Cavalrymen are expected back from Camp Peay sometime in January.

Lieutenant Colonel Paul J. Matte (Cav.) reported to the post for duty on December 21, 1940 and is assigned to Headquarter and Station Complement C. A.S.C.

For December and January the regiment has had approximately 11 officers and 51 enlisted men on duty with the Induction and Reception Station at this post.

First Lieutenant Glenn Fant and 9 men went to Butler, Penn., and took driveaway delivery of 8 Bantams on the 16th of December. The road march home, by way of Fort Hayes and Fort Knox, broke in the vehicles so that on their arrival at Fort Oglethorpe, they were ready for tests.

Lieutenant Colonel Considine personally put these Bantams through every conceivable test. From sticking them in mud holes to towing a 37-mm. gun, the Bantams proved themselves to be very satisfactory.

* * *

Sixth Reconnaissance Troop—Fort Riley, Kansas

MAJOR M. E. JONES, *Cavalry, Commanding*

The troop received permission from the Adjutant General to fire the .22 caliber machine gun for their record firing as they have an excellent gallery range, and the weather prohibited firing the regular outdoor course. Consequently, a great part of November, December and January was spent conducting this record firing. The troop also spent a week in December firing at field targets, both moving and stationary, with .30 caliber, .50 caliber, and Thompson sub-machine guns.

On December 13th, Lieutenant Creamer was graduated from the Advanced Communications School and Lieutenant Brackett was graduated from the Advanced Motors School. These two officers are now on duty with the troop as Communications Officer and Motor Officer respectively. Lieutenant Nelson is now in the Communications School and Lieutenant Davies is enrolled in the Motors School.

On December 15, the troop received twelve more new scout cars, six of their own, and six which the Cavalry School has loaned to the troop for training purposes. Twelve new Indian motorcycles were also received in the same shipment. In attempting to teach everyone in the troop to become a good driver, the sixteen scout cars and twelve motorcycles are kept rolling practically all the time.

Seventy of the eighty-two men which the troop had enrolled in the Post Radio School graduated on January 11, 1941. The men we had in Mechanics School, Motor School, Armorers School, and Bakers & Cooks School also graduated on January 11, 1941. It is contemplated on taking several field trips after the middle of January, provided our field kitchen and maintenance equipment arrives by that time.

The troop participated in a review for the commanding general of the 2nd Army, Lieutenant General Ben Lear, on December 17, 1940. On December 20th, an all day inspection of the men, quarters, vehicles, and

state of training was made by Colonel Sprinkle, who represented the Commanding General of the Sixth Division. The troop feels very proud of the results of this inspection, for the official report submitted to the Commanding General of the 2nd Army contained only complimentary comments.

Due to the liberal policy of the War Department in regard to Christmas furloughs, nearly one hundred men went home for the period from December 22, to January 2, 1941. On the night of the 21st of December, the troop gave the men a fine send-off when we had our first Troop Party in the Post Gymnasium. Music was furnished by the Ninth Cavalry Band, and everyone had a fine time.

11th Cavalry—Imperial, California

COLONEL HAROLD M. RAYNER, *Commanding*

Pausing briefly to salute a badly bruised 1940 as it staggered off to its rest billet in history, the 11th Cavalry has plunged into the first month of the new year for an intensive push to accomplish:

Complete reconnaissance of all critical points between the Pacific Ocean and the Yuma Sector;

Completion of training under the MTP's to bring both squadrons to required efficiency;

Organization of three new troops of the Regiment;

Training of 800 remounts within the next three months;

Training of a like number of selectees and recruits;

Organization of specialist cadres for the Cavalry Replacement Center at Fort Riley;

Small arms firing for the entire Regiment.

Directing the Regiment's efforts on the seven-fold 1941 mission is the new Regimental Commander, Colonel Harold M. Rayner, who joined November 27, shortly after the 11th Cavalry had established itself in its new camp near El Centro. He is assisted by Lieutenant Colonel Alton W. Howard, S-3.

Aggressive action on over-extended fronts, with reduced strength, is nothing new for the Pacific Coast Cavalry outfit. During the past year the 11th Cavalry has accomplished successfully concurrent missions which involved, among other things, organization of an Engineer regiment, training of civilian components, security and screening missions for two different divisions, and rail and motor movements covering close to two thousand miles.

Tactical inspections of the 1st Squadron at Seeley, and the 2nd Squadron at Campo, are scheduled in January and early February. Remounts, arriving in batches of 100 and 200 horses, will receive eight-weeks training and the first group of animals will arrive January 12. At the same time last-minute preparations must be pushed for the activation of Special Weapons Troop and Troops C and G on February 10. It is expected, also, that the Regiment's 70-man cadre for the Cavalry Replacement Center will be ordered to Fort Riley early next month. Rifle season, border reconnaissance and completion of regular training will be taken in stride!

Gains and losses among officer personnel during the past two months show: new arrivals: Colonel Rayner, to command; Captain Whitside Miller, who commands Troop B, and 2nd Lieutenants Thomas C. Chamberlain (Troop A), Herbert Bowlby (Troop B), Wallace G. Clement (Troop E), and James L. Smiley (Troop F). To new posts have gone Lieutenant Colonel John T. McLane who returns to duty with National Guard: Lieutenant Colonel Wayland Augur who will be the Cavalry Replacement Center executive officer; Major Alexander George to the Replacement Center as S-3, and Captain C. M. Iseley, who will assist Major George at Fort Riley. The re-shuffle has reduced the regiment to only one field officer.

Farewell gesture on the part of the City of Monterey in honor of the Regiment's 20-odd years of service on the peninsula was a bronze plaque presented in November—the occasion being the last Retreat parade on Presidio of Monterey's Soldier Field. The ceremony was held just before the Regiment entrained for Southern California.

12th Cavalry—Fort Brown, Texas

COLONEL ARTHUR E. WILBOURN, *Commanding*

The period of the last two months has been spent in intensive training prior to the movement of the 12th Cavalry Regiment to its new permanent station at Fort Bliss, Texas. This move is scheduled to take place around the first week in February, but definite details have not been issued. The Fort Brown Post will be occupied by elements of the 56th Brigade, National Guard, and a small detachment of Post Complement Troops of the Regular Army.

A cadre of 115 men recently left the regiment to join the Brigade Weapons Troop and 1st Division Anti-Tank and Reconnaissance Troops. To replace these vacancies a large number of recruits are expected to join the regiment very soon. Fort Brown now has about 100 men in a unit replacement center undergoing special one year's training, under the provisions of the Selective Service Act.

Specific training has included several regimental maneuvers stressing among other things, air-ground liaison, defense against aircraft and camouflage against air observation. These maneuvers were held in conjunction with units from Brooks Field, Texas. Numerous specialist schools have been added to training program and intensive training of cadres has been added to schedules.

The Division Commander, Major General Richardson, visited the Post December 12 and inspected the regiment in all phases of its work and training. He was accompanied by Captains Ruffner and Haskell, Operations Officer and Aide respectively. Brigadier General

Milliken, 1st Cavalry Brigade Commander, also inspected the Post December 3rd and 4th.

The officers of the Post have organized a very active Polo Association, Lieutenant Colonel Alexander B. MacNabb and Captain Charles J. Hoy are acting as instructors and coaches. Several teams are playing during all spare time. Most of the officers are training ponies from the excellent remounts recently assigned to this station.

The Commanding Officer of the 12th Cavalry, Colonel Arthur E. Wilbourn, has been appointed Inspector General, Eighth Corps Area, and will not accompany the regiment on its scheduled move to Fort Bliss. Colonel Wilbourn will be stationed at Fort Sam Houston, Texas, in his new position.

War Department orders of recent date have been received assigning Colonel Arthur H. Wilson, Cavalry, to duty with the Eighth Corps Area Service Command at Fort Brown; and Colonel Wilfred M. Blunt to duty with the 12th Cavalry. These officers are expected to join in the near future.

2nd Squadron, 12th Cavalry—Fort Ringgold, Texas

LIEUTENANT COLONEL FREDERICK R. LAFFERTY, *Commanding*

It was with deep regret that the 2nd Squadron learned of the loss of our Regimental Commander, Colonel Arthur E. Wilbourn. Colonel Wilbourn leaves the Regiment on January 10th to take over his new duties as Inspector General for the Eighth Corps Area and the 2nd Squadron wishes him all the success possible in his new assignment.

Many things have been happening to this Post so near the land of Mañana. Among the most interesting of these happenings has been the detailing of Cadres for the new Brigade and Division units now being formed at Fort Clark, Texas and Fort Bliss, Texas. Thirty men left this Post January 3d by motor convoy bound for the Brigade and Division posts to activate these different units.

The high light of the month of January will be the arrival of one hundred fifty remounts at this station, on or about the fifth of the month. The 2nd Squadron's time the balance of the month will be spent in training these animals and getting them ready to move with the regiment early in February to Fort Bliss.

Among other interesting events that have taken place at Fort Ringgold since the period covered by the last issue of The CAVALRY JOURNAL was the Leadership Test for small units, which was won by a platoon from Troop "E" 12th Cav. under the command of Lieutenant Levin L. Lee.

The 2nd Squadron is managing to find time on Sunday mornings to hold horseshows for both enlisted and commissioned personnel. Ribbons and prizes are being awarded the first four places. This all under the able direction of Captain Chandler P. Robbins, does a great deal toward bolstering morale and the spirit of competition runs high among the men.

Under the new expansion program this station has been very fortunate in that it has had its officer personnel enlarged to a total of thirty-four officers with a Major, Captain and Lieutenant of the Medical Corps and a Lieutenant of the Dental Corps yet to report early this month.

Visitors to the Post during the month of December included Major General Robert C. Richardson, Jr., the 1st Cav. Div. Commander; Brigadier General Walter B. Pyron, commanding the 56th Cav. Brig., and his party consisting of Lieutenant Colonels McFarland Cockrill and Ray T. Maddocks, Major Ashley Brewer and Lieutenant Fuller, aid to General Pyron. General Pyron's purpose in visiting this post was to inspect it before the occupation by a part of his brigade.

The 2nd Squadron has lost the following Officers during the last two months: Lieutenant John C. F. Tillson, III, to the Air Corps, Lieutenants L. L. Lee and Carl Schweitzer on detached service to the Basic Horse and Mechanized Course at the Cavalry School, and Lieutenant Dan S. MacMillan transferred to the Cavalry School Detachment.

The Chili Bowl, Ringgold's contribution to the athletic world is nearing completion. When this project is finished it will be used as a combination horse-show ring and athletic field.

The construction under way on the Post is coming along nicely. Troop "G" has moved into one of the newly reconditioned barracks and celebrated this occasion with a Christmas dinner in their new dining room. The other barrack is nearing completion and will be ready for occupancy within the next few weeks.

And this is the news from Ringgold,
Where the sands doth blow and the cactus grow.

13th Armored Regiment (L)—Fort Knox, Ky.

COLONEL R. E. MCQUILLIN, *Commanding*

The last few months have been busy ones for the regiment. In addition to the intensive training program, the regiment participated in a division review and gave a reinforced regimental tactical demonstration for each of the visiting groups of South American officers and for the Washington press representatives. The regiment also participated in the recent Division Command Post Exercise.

During this period the regiment has completed its range practice, plus the platoon and company tactical tests which were conducted by the 1st Armored Brigade. Emphasis has been given to road marching by battalions and larger units. Four over-night exercises have been conducted monthly. These have involved road marches of from 60 to 100 miles and usually have culminated in a concealed bivouac without lights, followed

by an early morning attack. Officer and non-commissioned officer schools are being held daily. Work for all begins promptly at 7:30 A.M. daily and continues until 5:00 P.M.

Early in January extensive individual training tests will be given company officers under Brigade supervision. These tests will cover all duties performed by company officers and should be of great value.

The selection and training of numerous cadres from the regiment is being given priority at the present time. This expansion will bring promotion to many men of the regiment, who, through schooling and personal application, have prepared themselves for higher grades and ratings.

In athletics our football team completed a successful season by defeating the 1st Armored Regiment (L), 26-6. Both being former Cavalry regiments, interest in the traditional game was especially keen. On December 20, a ceremony to include all officers, all 1st Sergeants and Regimental and Battalion Sergeants Major was held in honor of the team, at which time the Regimental Commander presented each member of the team with a suitable trophy.

The personnel of the regiment has been changing and increasing constantly. We now have 99 officers and 1,454 enlisted men. In the near future we expect an over-strength of some 350 selectees.

The regiment was not surprised when its Colonel, Jack W. Heard, was promoted to Brigadier General. We are sorry to lose General Heard, but glad to see him get the promotion which he deserves.

Major General Charles L. Scott, former Colonel, 13th Cavalry, September 6, 1936 until September 23, 1939, congratulating Brigadier General Jack W. Heard, former Colonel, 13th Cavalry and 13th Armored Regiment from September 24, 1939 until October 15, 1940 on the latter's promotion. Brigadier General Heard has just taken the Oath of Office and is about to inspect his first Guard of Honor which was furnished by the 13th Armored Regiment.

This event took place November 18, 1940 at Fort Knox, Kentucky.

26th Cavalry (P.S.)—Fort Stotsenburg, P. I.

COLONEL ROBERT BLAINE, *Commanding*

The 26th Cavalry's scheduled Beach Firing at water targets at Olongapo terminated October 30th. Troop "A," after having completed its beach firing relieved Troop "B" at Olongapo. Troop "B" then returned to Fort Stotsenburg.

On October 12, Major General George Grunert, Department Commander, came to the post sometime shortly after midnight and alerted the command. The alert was sounded at 3:15 A.M. and at 6:45 A.M. the command was ready to take the field for extended field service. The command passed before the Department Commander at 7:00 A.M. at the Clark Field Gate.

A party consisting of the American High Commissioner, Honorable Francis B. Sayre, Major General George Grunert, Commanding General, Philippine Department, Major General Jonathan M. Wainwright, Commanding General, Philippine Division, Brigadier General E. P. King, Commanding General, Fort Stotsenburg, Colonel Robert Blaine, Commanding Officer, 26th Cavalry (PS), Colonel Arthur W. Holderness, Headquarters Philippine Department, Captain John W. Raulston, Medical Corps, Captain William J. Priestly, (OUSHC), Captain John R. Pugh, Cavalry, and Second Lieutenant R. F. Parkhill, FA Res., left Fort Stotsenburg about 1:00 P.M. on the afternoon of November 15th. The party rode in open reconnaissance cars from the post to the first rendezvous at Camp Hand where the horses were waiting. While en route to Camp Hand the group was drenched by a mid-November cloudburst which necessitated the wearing of skid-chains on the cars and consequent delay in the schedule. The party arrived at Camp Hand at 2:30 P.M.—safe but wet.

Shortly after bidding good-bye and well wishes to

the ladies, the group mounted, and headed by Colonel Blaine, left Camp Hand on its second leg of the journey en route to Camp Sanchez arriving there at 5:15 P.M. The trail from Camp Hand to Camp Sanchez through Soldier's Road to Success, Sulit's Circle and Moore's and Garrison's Incline exhibited to all the varied terrain and beautiful tropical foliage of Philippine mountains.

On the morning of the 16th, the High Commissioner's party left Camp Sanchez to scale Mount Pinatubo. The ascent took two and one-half hours due to numerous halts to view the splendid surrounding mountain ranges and distant lowlands. Lunch was eaten while a camp-fire was built on the peak of Mt. Pinatubo. Unfortunately, the much heralded magnificent view of the Central Plain of Luzon and the China Sea across the range were not visible due to fog. Entertainment by a tribe of Balugas, climaxed by a Baluga War Dance, ended the day's itinerary.

Early on the morning of the 17th, the group, led by Colonel Blaine, left Camp Sanchez, en route to Santa Fe, Zambales, arriving there at noon. A battery of the 24th Field Artillery had established camp on the south bank of the Mapanuepe River. The party lunched and rested at the artillery camp and at 2:00 P.M. left for Manila and Fort Stotsenburg, thus ending the American High Commissioner's three day sojourn through the China Sea Trail.

The regiment regrets the departure, on the February transport, of Captain Robert E. Arnette, Jr., and Captain Robert H. Bayne.

The 26th Cavalry welcomes, to the regiment and the Philippines, the following officers (Cavalry Reserve) due to arrive on the February transport:

Second Lieutenant Ethon R. Cunningham,
" " William K. Boyd,
" " Paul K. Allen,
" " Robert C. Burlando, Jr.,
" " Warren A. Menton,
" " George J. Spies,
" " Frederick F. Thomas
" " Domineck Trogalia,
" " Henry D. Mark, and
" " Carol I. Cahoon.

★ ★ ★

306th Cavalry—Baltimore, Maryland

COLONEL MATTHEW F. JAMES, *Commanding*

At the first conference in November, Major John P. Dean spoke on his experiences in the Texas-Louisiana maneuvers of May, 1940. Major Dean commanded a Squadron of Regular Army Cavalry and the Cavalry set a fast pace and with hard, fast riding, lack of food and loss of sleep and constant contact with the opposing forces showed the ability of both horse and man to take a terrible beating day after day and still present a well disciplined and hard fighting outfit. This maneuver again demonstrated possibilities and value of our Arm. At the second conference in this month Captain Henry Sheen lectured on "the Assault: Hand-to-hand technique" and the ".45 cal. Sub-machine gun." Lieutenant Colonel George Milholland was our guest and talked on the "Selective Service" and the "Corps and Corps Area."

During December, Lieutenant Thomas E. Jarman, Jr. had the conference on "Attack Aviation and Ground Troops" and at this same conference movies were shown of "Attack Aviation." On December 11, the Baltimore Chapter, R. O. A., had Cavalry Night and the officers of Baltimore and vicinity attended instead of the regular conference. Captain Graham Dukehart was in charge of this affair and the guest speaker was Colonel Bruce Palmer, who talked on "Miscellaneous Developments of World War II." This talk gave an interesting insight on the material, personnel and morale of the British, French and German Armies, and gave a better understanding of the cause of the French collapse.

Additional officers of the Regiment are being ordered to duty with the Regular Army and shortly after the first of January, 1941 nearly all the eligible officers in Baltimore will be away.

★ ★ ★

308th Cavalry—Pittsburgh, Pa.

COLONEL GEORGE H. CHERRINGTON, *Commanding*

Increased interest and activity of the members of the regiment in unit meetings and Army Extension School courses is very gratifying, and notwithstanding the fact that a considerable number of the officers of the regiment have been ordered to active duty, the enrollment in Army Extension School courses is at a peak.

Blue C.M.T.C., 1940 graduates and White C.M.T.C., 1940 graduates who were recommended for the Blue 1941 course are working hard to complete the required Army Extension School courses to qualify for a commission.

Officers of the regiment continue to make a real effort to prepare themselves for active duty by continual study and exercise and by equipping themselves with uniforms and equipment suitable for whatever duty they may be called upon to perform.

The members of the regiment are deeply indebted to the following regular Army officers who served with the 308th Cavalry as Unit Instructors for their untiring efforts in behalf of members of the regiment:

Lieutenant Colonel Arthur H. Truxies,
Lieutenant Colonel Eustis L. Hubbard,
Lieutenant Colonel Louis G. Gibney,
Lieutenant Colonel Leslie F. Lawrence,
Major Alladin J. Hart.

★ ★ ★

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Book Reviews

A PRACTICAL MANUAL OF MARTIAL LAW. By Captain Frederick Bernays Wiener, JAG-Res. (Special Assistant to The Attorney General of the United States.) Military Service Publishing Company, 1940. 165 Pages; Index; $2.00.

The author clarifies for the layman in language readily understandable, the various ramifications and complexities of Martial Law—that branch of law which deals with the extent to which military forces may properly be utilized to sustain or restore civil authority, with the measures that may be used by such forces in time of domestic stress and, necessarily, with the rights and liabilities of military personnel in such situations.

This is an excellent guide for officers handling such cases for it tells clearly just what can and what cannot legally be done in martial law situations.

* * *

WHY FRANCE LOST THE WAR. By A. O. Reithinger. Veritas Press, Inc. New York. $1.25.

Reviewed by General Hawkins.

This little book, written by a German, from a very German point of view, is an attempt to show by statistical discussion of economics and man power, and almost without any reference whatever to military, political or spiritual values, that France was doomed from the very beginning of the War.

He shows that the economic distribution of France's man power was such that the drafting of a sufficient number of men for the Army was certain to interfere fatally with her industries. Also he shows how the biological or man power of resistance during wartime has declined in France in comparison with Germany and Italy since the World War. And he further states with convincing facts and figures that France's military victory in the World War was a Pyrrhic victory and a financial defeat which destroyed her position as a World Power.

Finally he concludes that the great tragedy of France is that the "Nation biologically weakest and most imperiled has made itself available for England's new coalition-war against Europe."

As such, the book is very interesting although the average reader will notice that the author has failed to attach enough weight to the character of a nation, to military efficiency and prowess, or the lack of it, and to the absence in France of a sound political system.

JUGGERNAUT OVER HOLLAND. By E. N. van Kleffens. Columbia University Press. 1941. 195 Pages; $2.00.

This book is a first-hand account of one of the most shocking instances of international duplicity. Its author –E. N. van Kleffens, Minister of Foreign Affairs for the Netherlands–describes the gathering of the clouds of war, and the breaking of the storm, as he, from the vantage point of his official position saw these events transpire. He tells of the efforts Holland's Queen made to prevent the conflict; of the lengths to which The Netherlands went in its efforts to achieve and maintain complete neutrality. He tells of the flying of German planes over Holland; of the sinking of Dutch boats; of the smuggling of Dutch police and postal uniforms into Germany; of the way men were kidnapped on Dutch territory and hauled over the border into Germany; of the parading and employing of hordes of German troops along the Dutch frontier; of German refusal to deliver munitions and arms which the Dutch had bought and paid for; and of the inexplicable growth of the German diplomatic staff at The Hague.

And all this while German actions were saying one thing, German words were protesting friendship and the best of intentions–how during this period, at the special request of the Nazis, Holland looked after German interests in Poland and South Africa. And then late in the evening of the 9th of May came word from the War Office: "Tomorrow at dawn; hold tight."

He tells of the war in the air; the bombing of the Queen's palace; the dropping of parachute troops; the emergence of the fifth column; the almost instantaneous creation of battlefields in the middle of cities far removed from the frontier; the destruction of Holland's airfields; the sacrifice of the entire Dutch air force; the appearance of German troops in the uniforms of Dutch soldiers; the terrorization of the populace; and the characteristic Nazi document presented by a somewhat embarrassed German envoy about to take his leave.

These are but a few of the many incidents herein recounted with restraint and in detail which make *Juggernaut over Holland* one of the principal documents of the Second World War.

* * *

PAN AMERICA: A PROGRAM FOR THE WESTERN HEMISPHERE. By Carleton Beals. Boston: Houghton Mifflin Company, 1940. 517 Pages; Index; $3.00.

Mr. Beals, who is by way of being an authority on South America, has totaled up its assets in vital raw materials, added them to ours, and from the sum deduced a program for mutual security and economic survival.

Pan America is a veritable encyclopedia of the items in the South American storehouse, ranging from antimony and bananas on through manganese and petroleum, to whale oil and wool.

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Horse Feathers

Modern Stuff

ORDERLY: "Sir, where is Colonel I. Q.?"

ADJUTANT: "Over yonder, teaching his remount the *'fluid* walk,' *'static* halt,' or sumpin'."

ORDERLY: "Gosh, sir, I thought fluid and static related to the defense."

ADJUTANT: "That remount is the essence of defense tempo!"

TROOPER: "Sir Captain, may I have a forward pass —I mean, FURLOUGH, sir?"

It would seem that common sense is most uncommon.

RECRUIT: "Say, corporal, who is *Private Dumb John?"*

CORPORAL (possessed of tremendous will-power and self-control): "Never mind, trooper, you'll meet him sometime."

A laugh is worth a hundred groans in any market.

SERGEANT INSTRUCTOR (indicating points of the horse): "Now this is what we call a *chestnut."*

TRAINEE: "Aw, Sarg—quit yer joking!"

"Funny that to rise in the army is the same as success in sleep—keep your windows open and your mouth closed."

A trooper who doesn't want to eat and drink things that make him sick, is sick.

The crease in an officer's slacks makes little difference until it isn't there!

The law of gravitation cannot be seen, but we know it exists when the brakes on a scout car won't hold on a steep hill.

RECRUIT I: "Sergeant A says that in the horse cavalry we don't have *sorrels.* Says he, *Chestnut* is the specific color."

RECRUIT II: "Well, he's the *Color Sergeant;* he ought to know."

CHAPLAIN: "Trooper, do you know *church call?"*

TROOPER (condescendingly): "Sure, sir, but I thought YOU wuz a chaplain."

Whenever an *individual* is *essential* to an organization, that outfit is not a military organization!

SERGEANT INSTRUCTOR: "The region between the thigh and the hock is the gaskin."

TRAINEE: "Gosh, a mechanized horse!"

SERGEANT INSTRUCTOR: "I said *gaskin,* not *gasket*— Pay attention!"

SUPPLY SERGEANT: "Here, Rookey, this is your gas-mask, and if it leaks you can bring it back."

RECRUIT: "?!?"

Remark on a *yellow expiration envelope:* "A panegyric to 'Horse Feathers' and T. Wadelton. These relieve the professional profundity of the publication. Keep them alive!"

Note: *Why not contribute a "horsefeather" from your cap?*

"Individual leadership"

War Department Changes

CAVALRY PERSONNEL

(From November 11, 1940 to January 18, 1941)

Captain D. V. Adamson, relieved 1st Armored Div., Fort Knox and temporary duty at Alabama Institute of Aero., Tuscaloosa; assigned 10th Cav., Fort Leavenworth.

Lieutenant Colonel H. T. Allen, relieved O. R., 2d C. A., Rochester, N. Y.; assigned 3d Cav., Fort Myer.

Lieutenant Colonel R. O. Annin, relieved O. R., 9th C. A., Presidio of San Francisco, December 1; assigned 8th C. A. Service Command, Fort Bliss; previous orders revoked.

Lieutenant Colonel W. B. Augur, relieved 11th Cav.; assigned Cav. Replacement, Fort Riley, Kans.

Captain C. S. Babcock, detailed as asst. mil. att. to Japan in addition to language studies at Tokyo.

Lieutenant Colonel J. W. Barnett, relieved as instructor, Army War College, Washington, D. C.; assigned Hq., 4th Army Presidio of San Francisco; previous orders revoked.

Lieutenant Colonel Frank H. Barnhart, from Champaign, Ill., 5 Dec., to 3d Cav. Brig., Fort Riley, Kan.

Lieutenant Colonel Sexton Berg, detailed in I. G. D., January 28, relieved 1st Cav. Div., Fort Bliss; assigned Hq., 7th C. A., Omaha.

Lieutenant Colonel R. E. Blount, detailed as a member of G.S.C.; assigned G. S. with troops, and 1st Cav. Div., Fort Bliss; relieved Fort Riley.

Lieutenant Colonel W. M. Blunt, relieved as instructor, New York N. G., New York City; assigned 12th Cav., Fort Brown; previous orders amended.

Lieutenant Colonel J. J. Bohn, relieved 3d Cav., Fort Myer; assigned 2d Armored Div., Fort Benning.

Colonel N. B. Briscoe, relieved O. R., 5th C. A., Louisville, December 20; assigned 5th C. A. Service Command, Fort Knox.

First Lieutenant Thomas P. Brown, Dec. 10, to AC det., Chicago Sch. of Aero., Glenview, Ill., until Dec. 9, 1941.

Lieutenant Colonel W. E. Buchly, relieved 9th Cav., Fort Riley; assigned 9th C. A. Service Command, Fort Rosecrans.

Major E. M. Burnett, relieved Agricultural and Mechanical College of Texas, College Station, Jan. 8; assigned Cav. Replacement Center, Fort Riley.

Captain E. M. Cahill, relieved Peiping, China; assigned Chengtu, China.

Captain E. H. J. Carns, Cav. relieved 10th Cav., West Point, N. Y. to USMA, Cav. Sq., West Point, N. Y.

Lieutenant Colonel Maron Carson, Cav., relieved 10th Cav., West Point, N. Y. to USMA, Cav. Sq., West Point, N. Y.

Colonel F. K. Chapin, relieved O. R., 3d C. A., Philadelphia; assigned 2d C. A. Service Command, Pine Camp, N. Y.

Lieutenant Colonel McFarland Cockrill, relieved as instructor Texas NG; assigned 56th Cav. Brig., Dallas, Tex.

Lieutenant Colonel R. E. Craig, relieved O. R., 7th C. A., Omaha; assigned 4th C. A. Service Command, Camp Claiborne, La.

Lieutenant J. H. Critchfield, relieved 4th Cav., Fort Meade, S. D.; assigned 10th Cav. Ft. Riley, Kansas.

Lieutenant Colonel R. H. Darrell, relieved assignment C. A. C. and 69th C. A., Fort Crockett, Jan. 15; assigned 1st C. A. Service Command, Fort Constitution.

Lieutenant Colonel P. R. Davison, relieved C. and G. S. School, Fort Leavenworth, Jan. 2; assigned 10th Cav., Fort Leavenworth.

First Lieutenant J. R. Degenhardt, relieved Armored Force, Fort Knox; assigned Cav. Replacement Center, Fort Riley.

Lieutenant W. M. Delaney, relieved 1st Cav. Div., Fort Bliss, Texas; assigned 10th Cav., Fort Riley, Kansas.

Lieutenant Colonel F. C. DeLangton's orders relieving him 12th Cav., Fort Ringgold, and assigning him 8th C. A. Service Command, Fort Brown, revoked.

Major I. Q. Donaldson, Jr., relieved 3d Cav., Fort Myer; assigned Cav. Replacement Center, Fort Riley; to report in A. G. O., Washington, D. C., for course of instruction, Jan. 6, for 40 days.

Lieutenant Colonel Ernest F. Dukes, det. as parole officer, U. S. Discip. Bks., Fort Leavenworth, Kan.

Lieutenant Col. D. R. Dunkle, relieved O. R., 3d C. A., Washington, D. C.; assigned 3d C. A. Service Command, Fort Myer.

Major C. W. Fake, relieved 2d Cav., Fort Riley; assigned 9th C. A. Service Command, Camp McQuaide, Calif.

Lieutenant Colonel P. C. Febiger, relieved as instructor, Wyo. N.G., Casper; detailed as instructor, Wyo. N.G., Cheyenne.

Lieutenant Colonel H. C. Fellows, relieved as instructor, Cavalry School, Fort Riley, Jan. 20; assigned Armored Force, Fort Knox.

Lieutenant Colonel J. R. Finley, relieved O. R., 9th C. A., Tacoma, Wash., Dec. 5; assigned 9th C. A. Service Command, Fort Stevens.

Captain M. W. Frame, relieved 9th Cav.; assigned Staff, Cav. Sch., Dec. 1.

Major A. L. Fulton, relieved 1st Cav. Div., Fort Clark, effective Feb. 1; detailed Augusta Military Academy, Fort Defiance, Va.

Major H. Galloway's orders amended to relieve him Fort Hamilton.

Lieutenant Colonel Geoffrey Galway, relieved O. R., 2d C. A., Governors Island, Dec. 15; assigned N. Y. Port of Embarkation, Brooklyn.

Orders amended to relieve Lieutenant Colonel Mack Garr as instructor, Ohio N. G. Cleveland, March 6.

Captain F. H. Gaston, Jr., relieved Fort Bliss, Texas; assigned 9th Cav., Fort Riley, Kansas.

Lieutenant Colonel W. C. Gatchell, relieved C. C. C., 5th C. A., Fort Knox, Dec. 1; assigned 1st Armored Div., Fort Knox.

Lieutenant J. P. Gerald, relieved 12th Cav., Fort Brown, Texas; assigned 10th Cav., Fort Riley, Kansas.

Lieutenant Colonel R. P. Gerfen, relieved O. R., 6th C. A., Chicago, Dec. 15; assigned Staff, Cav. Sch., Fort Riley.

Major Alexander George, relieved 11th Cav.; assigned Cav. Replacement Center, Fort Riley, Kansas.

Lieutenant Colonel L. G. Gibney, relieved 1st Cav. Div., Fort Bliss; detailed Agricultural and Mechanical College of Texas, College Station.

Major J. M. Glasgow, orders revoked.

Lieutenant Colonel S. R. Goodwin, relieved recruiting duty, Fort Slocum; assigned 1st Armored Div., Fort Knox.

Lieutenant Colonel R. MacD. Graham, relieved Kansas City high schools, Mo., Jan. 18; assigned 7th C. A. Service Command, Fort Leonard Wood, Mo.

Colonel F. D. Griffith, Jr., relieved 1st Cav. Div., Fort Bliss; assigned 8th C. A. Service Command.

Captain P. B. Griffith, relieved 1st Cav. Div., Fort Bliss, and temporary duty at Allan Hancock College of Aero., Santa Maria, Cal.; assigned A. C. Basic Flying School, Moffett Field, Dec. 31.

Colonel W. M. Grimes, relieved detail as member of G.S.C., assignment to W. D. G. S., and office C. of S.; assigned 1st Armored Div., Fort Knox.

Lieutenant Colonel T. G. Hanson, Jr., relieved O. R., 9th C. A., Los Angeles; assigned 3d C. A. Service Command, Arlington Cantonment, Va., sailing from San Francisco for New York, Jan. 11.

Captain P. C. Hains, 3d, Cav. relieved 10th Cav., West Point, N. Y. to USMA, Cav. Sq., West Point, N. Y.

Major A. J. Hart, relieved O. R., 3d C. A., Pittsburgh, March 1; assigned 5th C. A. Service Command, Fort Hayes.

Lieutenant Colonel C. B. Hazeltine, detailed as member of G. S. C.; assigned G. S. with troops, and Hq., III Corps, Presidio of Monterey; relieved 14th Cav., Fort Riley.

Captain W. O. Heacock, relieved 6th Cav., Fort Oglethorpe, Ga.; assigned 10th Cav., Fort Leavenworth, Kansas.

Captain Frank S. Henry, relieved 9th Cav.; assigned Staff, Cav. Sch., Dec. 1.

Captain J. L. Hines, Cav., relieved 10th Cav., West Point, N. Y. to USMA, Cav. Sq., West Point, N. Y.

Lieutenant Colonel H. G. Holt, 4th Cav., to Cav. Replacement Center, Fort Riley, Kan.

Major G. B. Hudson, relieved 13th Armored Regt., Fort Knox; assigned 1st Armored Div., that station.

Captain C. M. Isley, 11th Cav. to Cav. Replacement Center, Fort Riley, Kansas.

Lieutenant Colonel C. R. Johnson, Jr., relieved as instructor, Ill. N.G., Urbana; assigned 106th Cav., Camp Beauregard.

Captain H. J. Johnson, Cav., relieved 10th Cav., West Point, N. Y. to USMA Cav. Sq., West Point, N. Y.

Colonel Byron Q. Jones, from Fort Knox, Ky., to 1st Cav. Div., Fort Bliss, Texas.

Captain C. W. Jones, relieved Staff, Cav. Sch., Fort Riley; assigned 3d Cav. Brig., Fort Riley.

Lieutenant Colonel C. ap. C. Jones, detailed as member of G.S.C.; assigned G.S. with troops, and Hq., 1st C. A., Boston; relieved O. R., 2d C. A., New York City.

Second Lieutenant G. E. Jones, orders relieving him 7th Cav., Fort Bliss, and assigning him Cav. Replacement Center, Fort Riley, revoked.

First Lieutenant W. P. Jones, Jr., relieved 3d Cav., Fort Myer; assigned Cav. Replacement Center, Fort Riley.

Major C. W. Kake's orders relieving him 2d Cav., Fort Riley, and assigning him 9th C. A. Service Command, Camp McQuaide, Calif., revoked.

Captain O. K. Kane, relieved 10th Cav., Fort Myer, Va.; assigned Cav. Det., Fort Myer, Va.

First Lieutenant J. J. Kelly, relieved 2d Cav., Fort Riley, effective upon arrival of 10th Cav. at Fort Riley, Feb. 1; assigned that organization.

Lieutenant C. E. Lippincott, relieved 3d Cav., Fort Myer, Va.; assigned 9th Cav., Fort Riley, Kansas.

Lieutenant J. L. McCroskey, relieved 12th Cav., Fort Ringgold, Texas; assigned 9th Cav., Fort Riley, Kansas.

Captain A. B. McDonnell, relieved Barksdale Field; assigned as assistant to constr. Q. M., Fort Sill.

Lieutenant Colonel J. T. McLane, relieved 11th Cav., Presidio of Monterey; assigned N. G. affairs duty, Hq., 9th C. A., Presidio of San Francisco.

Captain E. J. McNally, relieved Peiping China; assigned Chengtu, China.

Major P. MacK. Martin, relieved Staff, Cav. Sch., Fort Riley; assigned Cav. Replacement Center, that station.

Lieutenant Colonel P. J. Matte, relieved O. R., 4th C. A., Knoxville; assigned 4th C. A. Service Command, Fort Oglethorpe.

Lieutenant C. L. Miller, 1st Cav. Div., Fort Clark, Texas; assigned 10th Cav., Fort Riley, Kansas.

Captain Whitside Miller, relieved 2d Cav., Fort Riley; assigned 11th Cav., El Centro, Calif.

Captain J. O'D. Murtaugh, relieved 6th Cav., Fort Oglethorpe; assigned 9th Cav., Fort Riley, Kansas.

Colonel Edwin O'Connor, relieved O. R. 2d C. A., New York City, Feb. 1; assigned 7th C. A. Service Command, Fort Leonard Wood.

Captain D. M. Oden, relieved 1st Cav. Div., Fort Bliss, Texas; assigned 10th Cav., Fort Riley, Kansas.

Lieutenant Colonel C. F. O'Keefe's orders amended to become effective Dec. 16 instead of Jan. 5.

Major J. B. Patterson, to retire, physical disability, effective Nov. 30.

Second Lieutenant R. A. Peake, relieved 2d Cav., Fort Riley; assigned 9th Cav., that station.

Lieutenant Colonel H. McE. Pendelton, relieved as instructor, Texas N.G.; assigned 56th Cav. Brig., San Antonio, Tex.

Lieutenant Colonel J. T. Pierce, relieved Cav. Bd., Fort Riley; assigned 14th Cav., that station.

Colonel Arthur Poillon to retire Dec. 31, physical disability.

Lieutenant Colonel T. E. Price, relieved O. R., 4th C. A., Jacksonville, Fla.; assigned 4th C. A. Service Command, Fort McClellan.

Lieutenant Colonel H. M. Rayner, G. S. C., orders amended to assign him 11th Cav., Seeley, Calif., instead of Presidio of Monterey.

Major J. B. Reybold, relieved O. R., 1st C. A., New Haven; assigned USMA, West Point.

Lieutenant Colonel Duncan G. Richart, from Des Moines, Iowa, Jan. 1, to 9th Cav., Fort Riley, Kan.

Lieutenant Colonel J. F. Richmond, detailed as member of G. S. C., assigned G. S. with troops, and Hq., 2d Army, Memphis; relieved C. C. C., Fort Bliss.

Captain P. A. Ridge, relieved 3d Cav., Fort Myer, Va.; assigned 9th Cav., Fort Riley, Kansas.

Captain B. L. Riggs, relieved 10th Cav., Fort Myer, Va.; assigned Cav. Det., Fort Myer, Va.

Colonel J. A. Robenson, relieved O. R. 7th C. A., Omaha; assigned recruiting duty, Los Angeles; previous orders revoked.

Lieutenant Colonel J. E. Selby, upon his own application will retire March 31, act of June 13, 1940.

Lieutenant Colonel H. M. Shoemaker, relieved O. R., 8th C. A., Harlingen, Texas; assigned 8th C. A. Service Command, Camp Hulen, Texas.

Lieutenant Colonel C. L. Stafford, relieved O. R., 7th C. A., Des Moines; assigned 10th Cav., Fort Leavenworth.

Lieutenant Colonel H. P. Stewart, relieved 12th Cav., Fort Brown; assigned Cav. Replacement Center, Fort Riley.

Second Lieutenant J. C. Strickland, relieved Staff, Cav. Sch., Fort Riley; assigned 6th Cav., Fort Oglethorpe.

Colonel H. E. Taylor, relieved detail O. R., 9th C. A., Salt Lake City; assigned 5th C. A. Service Command, Fort Hayes, sailing from San Francisco for New York, Jan. 11; previous orders amended.

Lieutenant Colonel P. E. Taylor, detailed in I. G. D., Nov. 30; relieved as instructor, Texas N.G., Fort Worth; assigned 5th Div., Fort Benj. Harrison.

Lieutenant Colonel G. D. Thompson, relieved as instructor, Iowa N.G., Burlington, Jan. 28; assigned 113th Cav., Camp Bowie, Texas.

Major E. F. Thomson, relieved Staff, Cav. Sch., Fort Riley; assigned 1st Cav. Div., Fort Bliss.

Lieutenant Colonel S. A. Townsend, detailed in I. G. D., Nov. 30; relieved 14th Cav., Fort Riley; assigned 1st Cav. Div., Fort Bliss.

Lieutenant Colonel R. B. Trimble, relieved as instructor, Texas N.G., Houston; assigned recruiting duty, Fort Slocum.

Lieutenant Colonel J. M. Tully, relieved USMA, Dec. 1; assigned 3d Cav. Brig., Fort Riley.

Lieutenant W. L. Turner, relieved 1st Cav. Div., Fort Clark, Texas; assigned 10th Cav., Fort Riley, Kansas.

Lieutenant J. E. Tyler, relieved 6th Cav., Fort Oglethorpe, Ga.; assigned 10th Cav., Fort Leavenworth, Kansas.

Lieutenant D. T. Van Derhoef, relieved 6th Cav., Fort Oglethorpe, Ga.; assigned 9th Cav., Fort Riley, Kansas.

Second Lieutenant N. D. Van Sickle (now 1st Lt., Army of U. S.), transferred to A. C. on Dec. 20; relieved A. C. Advanced Flying School, Kelly Field; assigned A. C. troops, Savannah, Ga.

Lieutenant Colonel Thomas D. Wadelton, from Indianapolis, Ind., Dec. 1 to CCC, Fort Knox, Ky.

Lieutenant Colonel W. S. Wadelton, ordered to participate in aerial flights, Jan. 1 to Feb. 28.

Lieutenant Colonel V. W. B. Wales, relieved 1st Armored Regt., Fort Knox; assigned as instructor, C. and G. S. Sch., Fort Leavenworth.

Captain C. P. Walker, relieved 4th Cav., Fort Meade, S. D.; assigned 10th Cav., Fort Riley, Kansas.

Lieutenant Colonel J. P. Wheeler, relieved O. R., 3d C. A., Richmond, Va., Jan. 30; assigned 8th C. A. Service Command, Fort Clark.

Captain Sherburne Whipple, Jr., Cav., relieved 10th Cav. W.P.N.Y. to USMA, Cav. Sq., West Point, N. Y.

Captain E. W. Williams, relieved 10th Cav., Fort Myer, Va.; assigned Cav. Det., Fort Myer, Va.

Colonel A. E. Wilbourn, detailed in I. G. D., Jan. 10, relieved 12th Cav., Fort Brown; assigned Hq., 8th C. A., Fort Sam Houston.

Captain A. H. Wilson, Jr., relieved 7th Cav., Fort Bliss, and Cal-Aero. Training Corp., Glendale, Calif.; assigned A. C. Basic Flying School, Moffett Field.

Captain N. M. Winn, relieved Fort Bliss, Texas; assigned 9th Cav., Fort Riley, Kansas.

Colonel S. W. Winfree, relieved Reception Center, Fort McPherson; assigned 4th C. A. Service Command, that station.

Colonel A. H. Wilson, relieved 14th Cav., Fort Riley; assigned 8th C. A. Service Command, Fort Brown.

Captain William H. Wood, from West Point, N. Y., to 1st Cav. Div., Fort Bliss, Texas.

Colonel W. H. W. Youngs (Lieut. Col.), detailed in I. G. D., Feb. 1; relieved as instructor, Iowa N.G., Des Moines; assigned Hq., 5th C. A., Fort Hayes.

Captain H. M. Zeller, relieved 14th Cav., Fort Riley; assigned Cav. Replacement Center that station.

CAVALRY OFFICERS (RETIRED)

On Active Duty

Bradford, David E., Capt. Cav. (Sig.C.), Recruiting at San Antonio, Texas.

Bridgman, Richard H., 1st Lt. Cav., University of Arizona.

Bull, Henry T., Col. Cav., 9th C.A.S.C., San Luis Obispo.

Byrd, Carl B., Major Cav., Recruiting, Cincinnati.

Chapman, Carleton G., Lt. Col. Cav., Office of the Inspector General, Washington.

Colley, Archibald T., Lt. Col. Cav., Univ. of Georgia.

Commiskey, Archibald F., Col. Cav., N.Y. A., Hq., Baltimore.

Cooper, Vaughn W., Lt. Col. Cav., Office of the Chief of Staff.

Coxe, Alexander B., Col. Cav., Office of the Chief of Staff.

Cramer, Charles, Major Cav., Okla. Military Academy.

Creel, Buckner M., Capt. Cav., Mass. State College.

Edmunds, Arthur D., 1st Lt. Cav., Finance Department, Hq. 1st Corps Area.

Farman, Elbert E., Jr., Major Cav., U. S. Military Academy.

Fitch, Roger S., Col. Cav., Hq., Fort Ord, Calif.

Hunter, Francis R., Major Cav., Univ. of Calif.

Hurt, Charles M., Capt. Cav., Savannah High School, Savannah, Ga.

Hyndman, Floyd M., Major Cav., Armored Force, Ft. Knox, Ky.

Jones, Leslie B. C., Capt. Cav., Liaison officer, 9th Corps Area, N.Y.A.

Kromer Leon B., Col. Cav., Cavalry Board, Fort Riley, Kansas.

Massey, Oscar M., Major Cav., Guthrie High School, Okla.

Merrill, Alberto E., Major Cav., Recruiting, Los Angeles.

Norton, Anderson H., Capt. Cav., New Mexico Military Inst., Roswell, New Mexico.

Oliver, Llewellyn W., Col. Cav., Office of the QMGen.

Olsen, Alexander G., Major Cav., Rogers High School, Newport, R. I.

Peabody, Orland S., Capt. Cav., Pueblo High Schools, Pueblo, Colo.

Pearson, John A., Capt. Cav., Organized Reserves, Oklahoma City, Okla.

Stevens, John F., Major Cav., Texas A&M, College Station, Tex.

Stringfellow, Horace, Jr., Capt. Cav., C.C. C., Anniston, Ala.

Vollmer, Arthur, Major Cav., Recruiting New York, detached with the Military Intelligence Office.

Wise, James B., Jr., Major Cav., Texas A&M, College Station, Tex.

Wood, Delmore S., Major Cav., Univ. of Arizona.

NOTE—Any retired cavalry officer who is now on active duty and whose name does not appear on this list should notify The CAVALRY JOURNAL or Chief of Cavalry's office.

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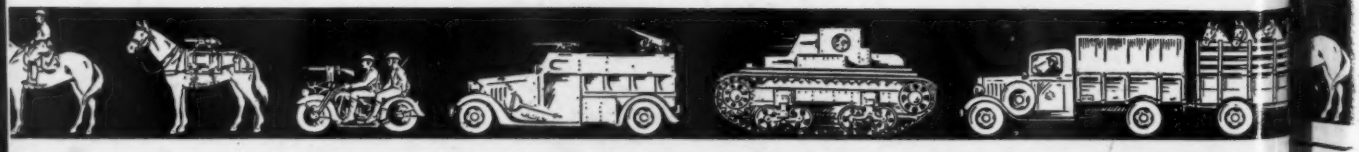
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